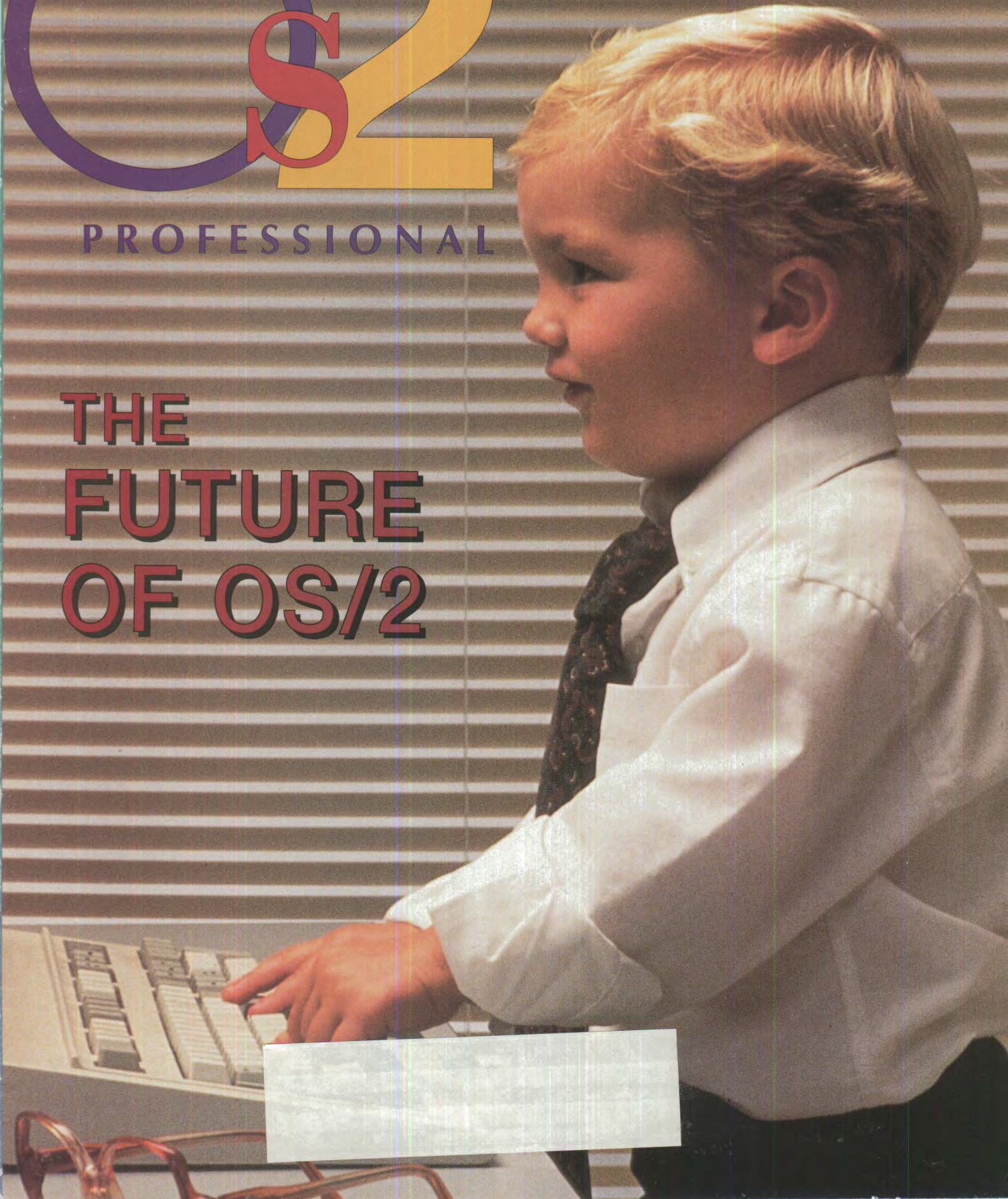
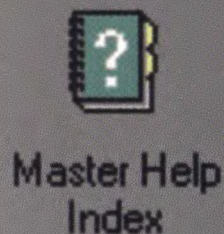
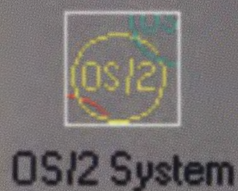
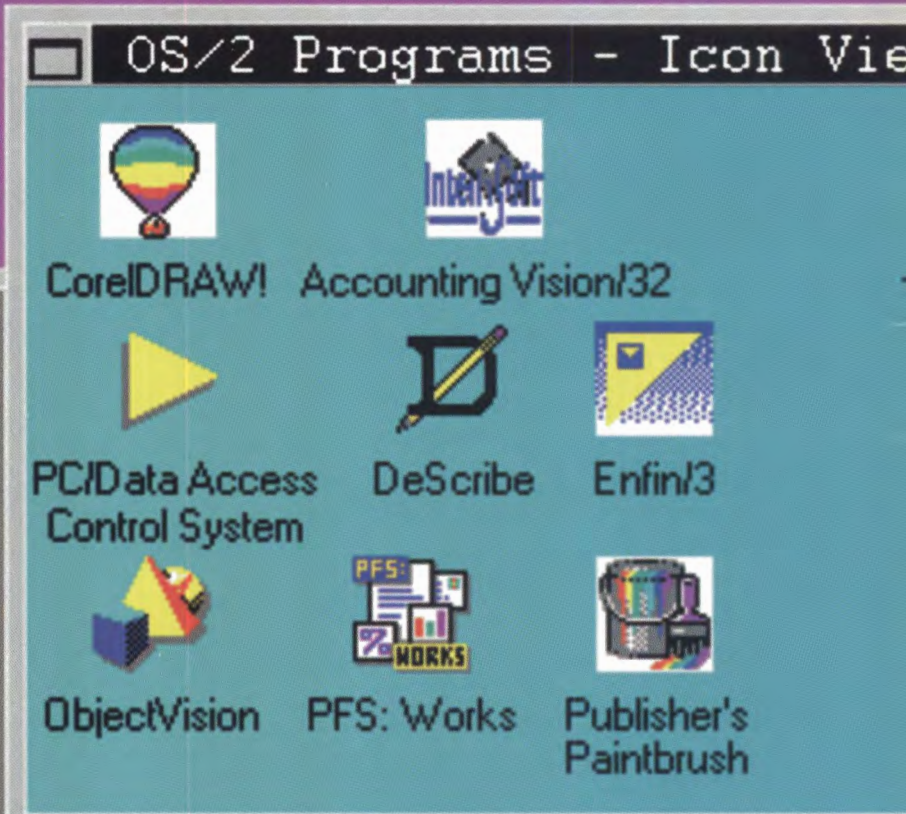
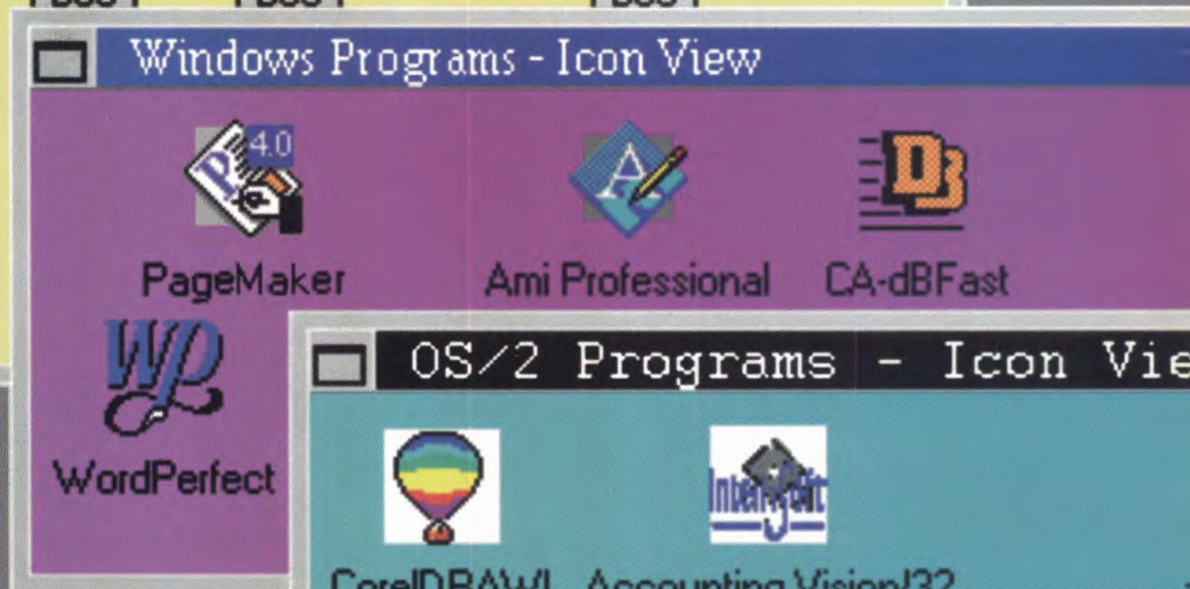
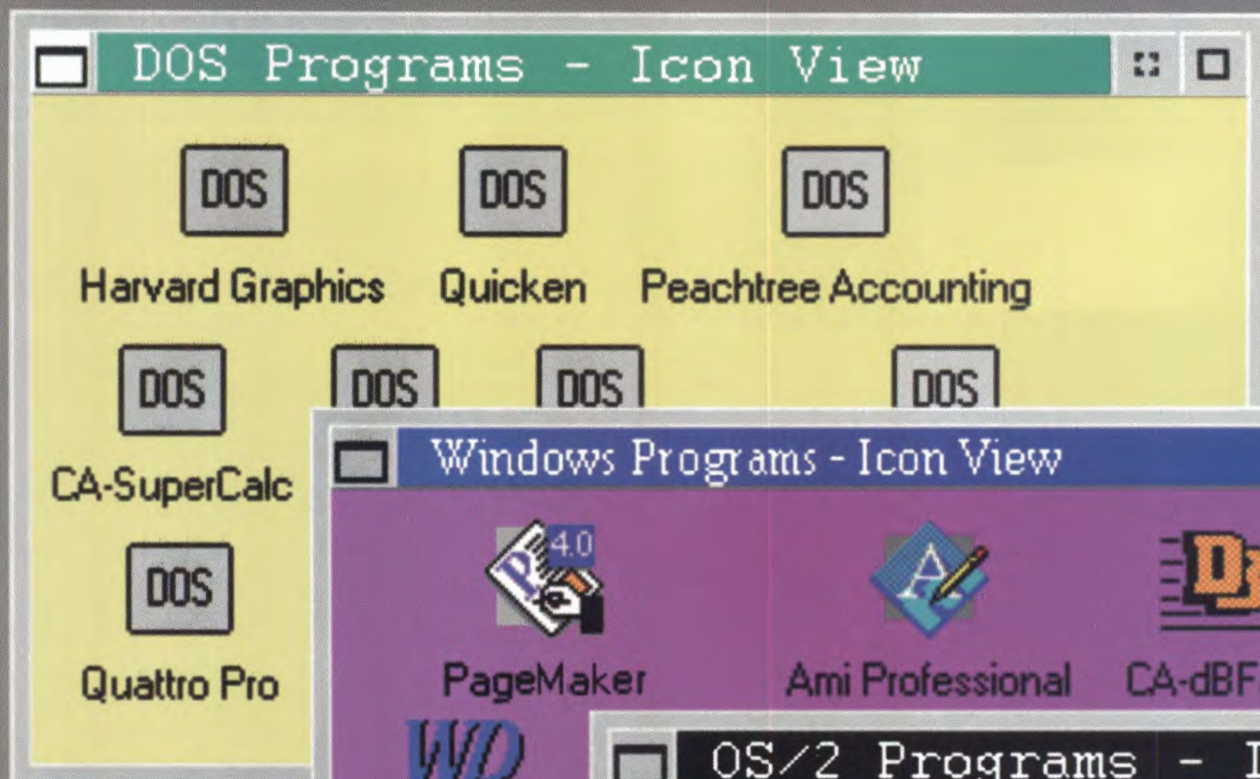




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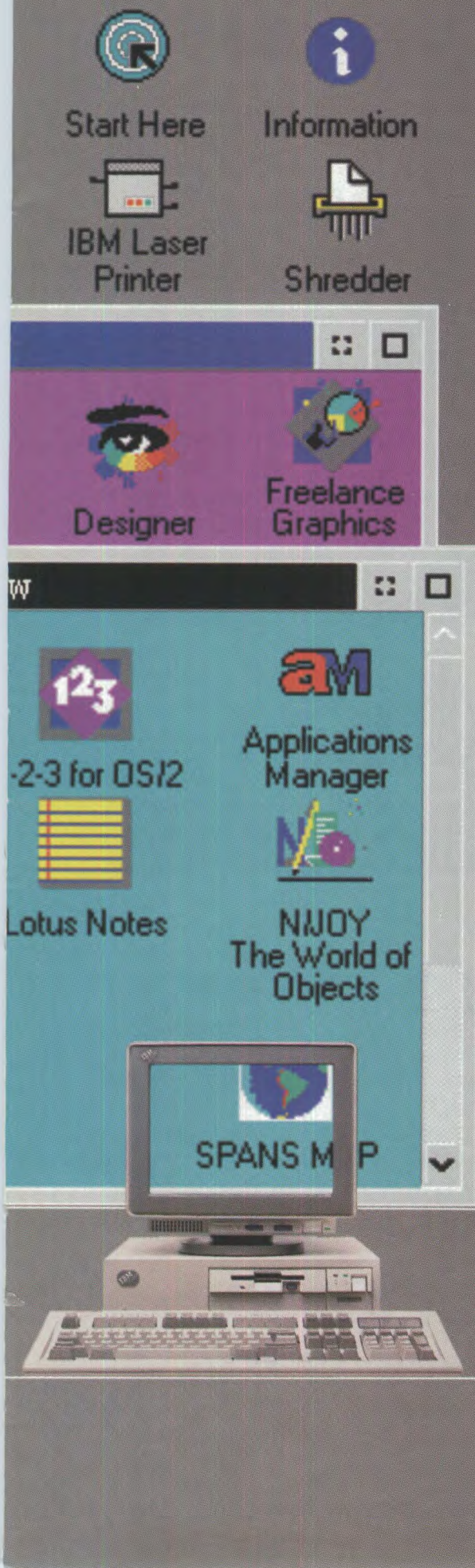
THE FUTURE OF OS/2





OS/2

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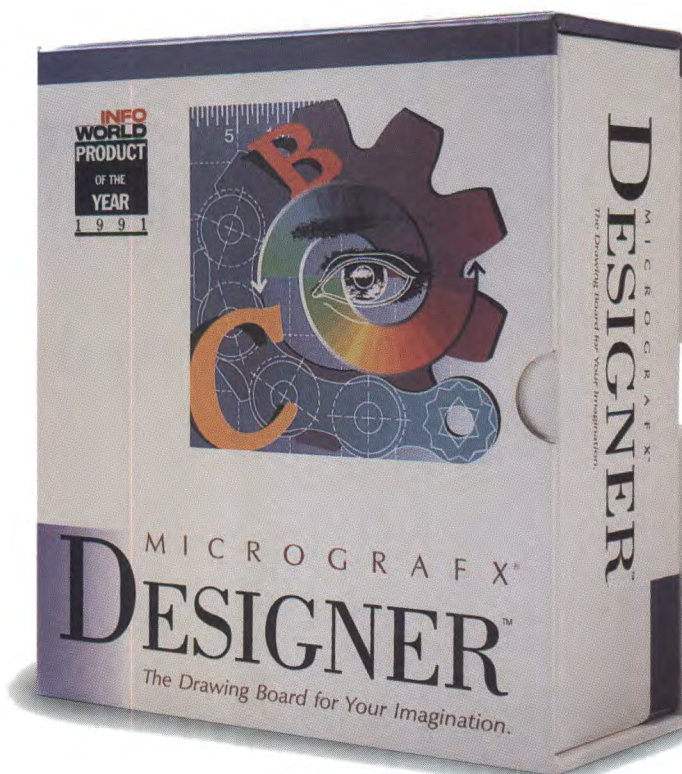


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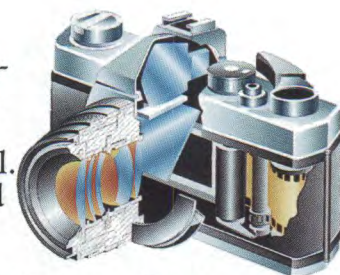


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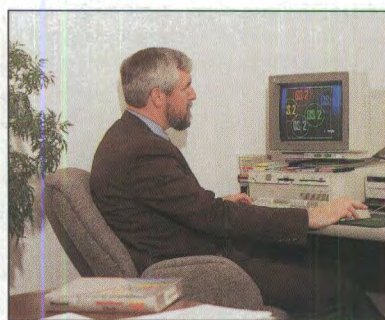
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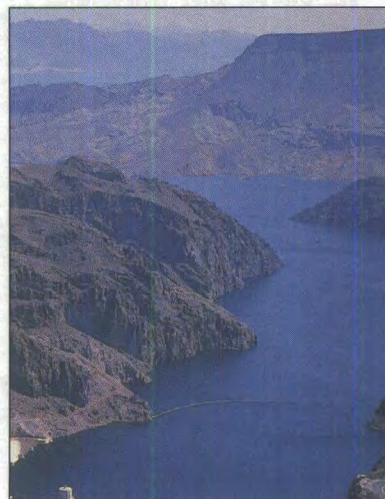


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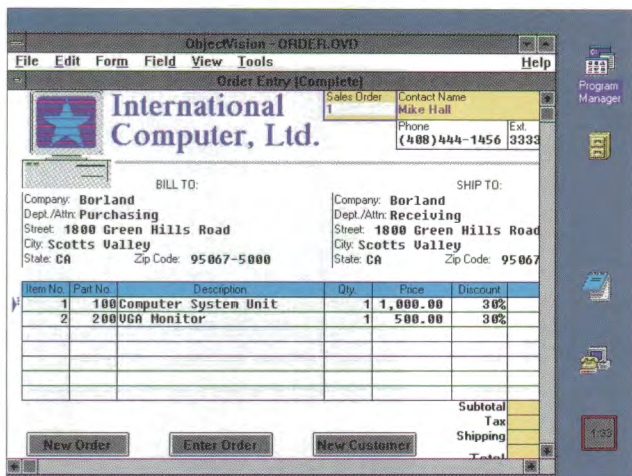
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Operating systems have cycles. Hence no one system will be the clear victor.

BY JACK BLOUNT

Q: What do Windows and OS/2 have in common?

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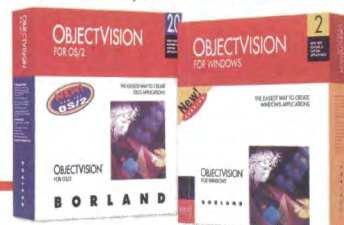
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PUBLISHER'S MEMO

Imagine a computer so powerful, so fast and so versatile that it can store and retrieve trillions of bits of data, multitask any number of complex applications and display unlimited connectivity. One other thing, this computer can dream and can tremble.

It is of course the human mind, the most important computer in existence.

Now imagine a magazine that sees the human mind as the chief beneficiary of a new multitasking operating system so advanced it will actually slow the frenzy of its users and improve their lives. The notion is quite simple: whereas Windows lets you do ten things at once, OS/2 lets your computer do ten things at once. As such, OS/2 may have revolutionized computers. Understand this, and you can understand the mission of *OS/2 Professional*, the first computer publication for users whose lives and businesses will be changed by the power that OS/2 conveys.

We speak of the OS/2 workstyle. We speak of the OS/2 lifestyle. They intersect. And this magazine will be there with signposts, roadmaps, guidebooks, warning lights and fascinating detours. Indeed, we will have six mandates: to inform, to entertain, to defend, to criticize, to remember and to predict. Our new breed of computer publication will combine the enterprise of seasoned two-fisted journalists with the expertise of established technical and computer trade writers.

We seek the inside story on the triumph and failures that make the world of computers an adventure, and that make OS/2 professionals the vanguard of that adventure. You haven't seen investigative journalism, feature reporting or user profiles in a computer magazine before? Rest your wrists. Pour yourself a cup of coffee, and read a spell. It's going to be that kind of magazine.

All the computers in the galaxy are worthless without the user. *OS/2 Professional* has that figured out. And it's going to show on every page.

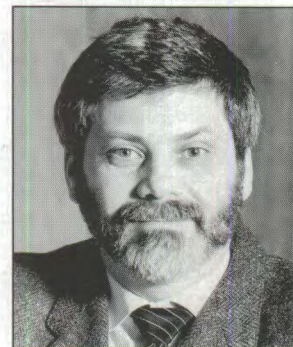
Ironically, the idea for this magazine only sprang forth in the weeks before COMDEX/Fall '92 as the magazine's organizers began to comprehend the intensely personal impact of OS/2 on the workstyles and lifestyles of its users. Almost overnight, we conceptualized a format, interested key supporters and advertisers, assembled the articles and graphics and then rendered 100,000 copies. Thirty thousand are being distributed at COMDEX. The balance are being mailed to IBM's registered user list. We expect to hit a quarter million *Fortune* 500 users and corporate developers by summer.

Creating a magazine, breathing life into its paper, injecting ink into its veins and imbuing personality onto its pages is the sort of undertaking that could take years of arduous planning. But just as OS/2 cannot afford to wait to bring its benefits to a world of users—now, this moment—so too, we could not wait. COMDEX/Fall '92—just three months after the millionth copy of OS/2 2.0 shipped—seemed the perfect time.

We in fact chose to do this thing—*OS/2 Professional*—not because it was easy, but because it seemed impossible. The prospect of impossibility is the mother's milk that energizes great projects and forces men and women to reach into the creative powerpools of their minds, and then empowers them to touch out to the stars and beyond. That's exactly what the men and women of *OS/2 Professional* did—as they pushed their brains and bodies late nights and weekends until the magazine was born.

In truth, the beauty of OS/2 itself is premised upon the fundamental that what was impossible yesterday, is indeed quite possible today. And there is the point. A point we will be making in every issue. We are not sure how far that point will reach. We're ready if you are. Welcome to *OS/2 Professional*. Join us.

Edwin Black



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INPUT

Comments, criticisms and observations

Welcome

Welcome to the world of OS/2 publications! As you know, the release of OS/2 2.0 had a major impact on desktop computing. More people are now using OS/2 and more developers are programming new 32-bit applications to meet the demand. This has launched new books, magazines, training videos and so forth. *OS/2 Professional* is just what these new users have been looking for. May you have much success!
Dick Conklin
Editor, *OS/2 Developer Magazine*
Boca Raton, FL

Exactly what's needed

This is the first time I have ever written a letter to the editor before the premier issue has been published. However, your editorial focus in *OS/2 Professional* is exactly what is needed to help everyone understand what OS/2 is. There is so much conflicting information for the press and feedback from the field, that getting a clear fix on it has been difficult. One thing clear to me is that OS/2 is not a replacement for DOS or Windows. It is more than that. It is a robust, industrial-strength operating system that could surprise a lot of industry watchers by becoming the operating system of choice for application system developers as well as the choice for large client/server systems.

Your magazine's initial success tells me that OS/2 has established a beachhead in the operating system battle. The

time is right for a professional level publication to keep all those involved or interested current on what is happening in the OS/2 world. As a publisher of books for computer professionals, we are pleased there will be a source of information to use to shape our OS/2 product line.

I'm looking forward to receiving the magazine. From one publisher to another, congratulations and best wishes for success.
Edwin F. Kerr
Publisher, QED Information Services
Cambridge, MA

Congratulations

Congratulations on the start of your new publication, *OS/2 Professional*. Since it's clear that OS/2 is well on its way to stardom, those of us who use OS/2 are in dire need of publications which address issues that are important to us.

Presently there are a million or two people who are currently using OS/2 and understand the benefit of advancing beyond some of our tired old ways of doing things. All of these people will use your magazine to their advantage by keeping current with information about the operating system and the software titles that are available for it.

In addition, there are tens of millions of other people who have yet to understand the untapped potential of their PCs. Your magazine can introduce them to a replacement system which runs all their current software and removes the barriers they have grown

accustomed to working around.

OS/2 is here now. Businesses which rely on personal computers have no reliable alternative to converting over to OS/2 and doing it now. For a little while, there was some concern that there might be a competitor to OS/2 available in the near future but it is clear that this is not the case. No viable alternatives will be seen in general use for at least another year. Other companies have proven themselves to be highly irresponsible in their promises and to be operating with blinders on while charting their corporate direction.

Software developers switching over to OS/2 are becoming a part of IBM's commitment to their customers and are not simply throwing their money at another "strategic corporate direction" which may change tomorrow. IBM and OS/2 give me confidence that I am learning and using a system with a future.

For those of us who understand OS/2 and have been working with it for a long time, there have not been many solid sources of information. *OS/2 Professional* is a welcome addition to the places I

go for OS/2 information. Best of luck to you in your speedy growth right along with OS/2.
Pete Norloff
OS/2 Shareware BBS
Fairfax, VA

IBM ready for future

On behalf of everyone at IBM Personal Systems Programming, congratulations on the debut of *OS/2 Professional*. We're pleased that your publication is dedicated to serving the needs of the rapidly expanding community of users of OS/2 2.0, IBM's advanced 32-bit operating system.

While many in the industry talk about the operating system of the future, IBM has already shipped more than one million copies of OS/2 2.0. In the coming months, we hope *OS/2 Professional* will become an important source of news and information as we add new products and functionality to OS/2, and users find new ways to increase their productivity.

Thank you for joining us as we build the bridge between yesterday and tomorrow with OS/2 2.0. ♦

John R. Patrick
Vice president, Sales and Marketing, IBM Personal Systems Programming
Somers, NY

Submit letters to Input, *OS/2 Professional* c/o International Features, 6129 Executive Blvd., Rockville, MD 20852. All letters must be signed on letterhead, no more than two typed double-spaced pages. Diskette files accepted in unformatted ASCII or Microsoft Word for DOS. All letters become the property of *OS/2 Professional*, and will be edited for size and content. Diskettes will not be returned. Email: via MCI Mail to os2pro or via Internet to os2pro@mcimail.com.

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Circle #17

BYTES & PIECES

News and trivialities, important and obscure

Share and share alike

Have a question about OS/2? Want to find a piece of OS/2 shareware? Want to compare notes with users in Europe, Asia or just across town? Dial up the OS/2 Shareware BBS with free access at (703) 385-4325 or via subscription at (703) 385-8450.

Located in Fairfax, Virginia, a suburb of Washington D.C., the OS/2 Shareware BBS has been in operation since March 1990, operated by this correspondent. The system reportedly has the largest collection of OS/2 shareware and free-ware programs and information in the world, and indeed is one of the most popular OS/2 bulletin boards in the country.

Five lines feed into U.S. Robotics HST Dual Standard modems connected to 1.3 GB of storage. The BBS uses the Maximus CBCS software. Binkleyterm is used for the network interface software. More than 10,000 calls are recorded each month.

The BBS is connected to four computer networks: Fidonet, ibmNET, OS2Net and Usenet. All types of OS/2 questions are asked and answered every day in message conferences on these networks. And all callers have the ability to post questions on any of the networks. Access is provided

to 19 OS/2 related Fidonet message conferences, six ibmNET OS/2 conferences, five OS2Net conferences and six Usenet OS/2 conferences.

Conference topics cover all areas. Examples range from the Fidonet OS2LAN conference for discussions about networking under OS/2 to Usenet's comp.os.os2.programmer conference for discussions about programming for OS/2. Fidonet offers a general OS/2 conference for questions and discussions that do not fall into one of the more specific conferences.

Files on the system are categorized into 20 different areas, covering more than 3,200 OS/2 applications, utilities, communication programs, development tools, device drivers and information files available for download. First time callers are given immediate access to the system. Additional time online and additional telephone lines are available for a small contribution toward operating costs.

Peter Norloff

A league of their own

Still bitter about that rejection notice as a high school senior from your favorite Ivy League college? Don't worry. There's now another Ivy League—IBM's I.V. (or Independent Vendor)

League, to be exact—which will surely be more supportive.

The I.V. League was established to provide marketing support to companies employing OS/2 products and services. The service, which includes training providers, as well as liaison with book and magazine publishers, consultants and authors, has been a highly visible presence at PC Expo, the Windows and OS/2 conferences and COMDEX trade shows. Several books from the program now rank on the computer book best-seller list. In addition, the league offers an OS/2 accreditation exam for those who wish to be listed as accredited subject matter experts in the I.V. League directory.

Ted Salamone, as program director of the I.V. League, runs the enterprise as a no-nonsense "rolled up sleeves" operation. He has a keen sense for the needs of vendors and the media. An action man, Salamone likes to get things done in a corporate environment that prefers to discuss initiatives to death. Even the split-up of IBM didn't stop his get-it-done-now approach. Some say he's part of the new breed of take-charge IBM execs.

Thus far, Salamone has made the I.V. League stand out as an efficient working operation that seeds and encourages the proliferation

of OS/2. If he can continue at the pace he has established, OS/2 will become the operating system of the future, and the I.V. League's role in that achievement will be undeniable.

R. Long & E. Black

A national health card

The government is edging closer to a national "health card" that looks and feels like a bank card, according to an initiative by Health and Human Services Secretary Louis W. Sullivan. The card would be issued to Medicare and Medicaid recipients and is expected to simplify the extraordinarily complex reimbursement procedures that currently consume billions of healthcare dollars each year.

Instead of being run through an electronic approval network from a retailer as a MasterCard or VISA would be, the health card would be run through a doctor's billing system. Many paper records would be eliminated since much of the billing would be electronic. Periodically, physicians would simply upload their billing claims to a central clearinghouse which would then issue checks

Such plans have been discussed for years. If Congress agrees to act on the measure, health cards could be carried by millions of Americans by mid-decade. ♦

Edwin Black



THE FUTURE OF OS/2

An inside look at the future of the operating system that will change the way corporations and people relate to computers.

BY EDWIN BLACK

I remember the Gregorian chants. Groups of men combined to vocalize one solitary note after another. Each note was executed as a virtual mission of faith—with strict rules on intervals, octaves, flats and sharps—and even the evil notes, which were out-of-bounds to the devout. The chants filled my mind with the poetry of systematic progression. As a music composition major in college, scoring for Gregorian monody was linear creativity.

I preferred symphony.

DOS reminds me of those Gregorian chants. OS/2 is the symphony. And now, the symphonic multitasking world of OS/2 will soon open to millions across the planet. OS/2 will become the crossroads of computing, the point where the parallax of operating systems finally intersect.

No one knows for sure precisely how many OS/2 users exist today. Not even IBM. The millionth shrink-wrapped copy was shipped last August. By mid-October, about 1.5 million copies had left the factory, *OS/2 Professional* has learned. IBM sources, declining to be identified, estimate the 2 million mark might be reached as soon as Christmas. Some optimistic market watchers are predicting growth of more than one million new users monthly next year.

Yet fewer than 100,000 have actually registered. Some individual registrations represent a solo PC. While many single corporate registrants represent dozens of legitimate users. Of course, not a few commercial registrants have loaded their one legal copy into every PC in their company. I know of one company that installed a single copy into five PCs in one office and then sent the diskettes to another location to repeat the process. Conversely, one small business typically installed OS/2 in its four desktops, but has yet to boot OS/2 in more than one of the machines.

At the same time, IBM is pre-loading OS/2 into most PS/2 units and other 386s and better when they leave the factory. How many users of those units simply disregard OS/2 and install Win-

dows is unknown. And how do you factor those who, like one small Washington retailer, uses one copy of OS/2 for every clone system he sells—more than a dozen each month?

Nor is anyone counting the thousands of IBM employees who use OS/2 at work and at home, and themselves become real world consumers even if they are excluded from the sales chart.

Go figure. What we do know is that the numbers have been compelling enough that IBM continues to invest millions in their marketing of the new system, and continues to subsidize and encourage the proliferation of applications that will make OS/2 infectious.

Quite simply, the best available SWAG (Scientific Wild Ass Guess) is that by year's end, two million human beings will indeed be clicking OS/2 icons—only half of them in America. A million new users per month is indeed a realistic growth level that may well be attained by next spring. Again only half of these new users will have addresses in the United States.

The OS/2 strategy is global. Sales are strong throughout Canada, Latin America and especially Europe. Indeed, IBM is aggressively planning to exploit markets in more than fifty nations. Beta-testers and software developers are reportedly being cultivated in Dusseldorf, Budapest, Hungary, Rome, London, Copenhagen and Paris—just to name a few. When East Europe explodes into the computer age, IBM hopes OS/2 will be the common fuse. Asian and the Pacific Rim markets are being developed with equal enthusiasm.

With Windows NT still trying to unlock its starting gate by who-knows-when next year, Big Blue is frantically making use of every working day to obtain market entry everywhere. Remember, once a corporation or individual computer owner steps onto the OS/2 platform, the loader, kernel and CONFIG.SYS are in. It will be hard to make them jump platforms. System allegiances are hard won, but even harder to change.

The universality of OS/2 springs from two very different

SPECIAL REPORT

appeals, one for the big corporate market, and one for the small commercial and personal user market. Both appeals help end-users conquer profound problems, and indeed represent radical new approaches to computing.

For Fortune 500 establishments with diverse hardware and software requirements, the hot word is connectivity. OS/2 allows just about everything to link up to just about everything else. Desktops running OS/2 right now are freely interfacing and/or networking with AS/400s, RS/6000s, Sun workstations and mainframes. Even Macintosh clients are being supported via LAN Server 3.0. A diverse array of operating systems already in place—AIX, UNIX, DOS, POSIX, Windows—can be preserved because OS/2 communicates with all of them. That solves a lot of stand-alone growth and networking problems.

To purloin a corny turn of phrase, OS/2 means never having to say you're sorry for an operating system. They all intersect at OS/2.

And because OS/2's true multithreading power allows dozens of simultaneous tasks, the downsizing of systems means economy and sensibility to the corporate world. Right about here is where some speculate that the mainframe will soon become an artifact of the past, to be replaced by the AS/400 or equivalent mini empowered with extra connectivity thanks to OS/2. Not quite, futurists. Mainframes as we know them are not going to disappear, designers insist, because they fulfill the profound data requirements of major commercial and intellectual establishments.

If all data is distributed among numerous desktops and AS/400s, how do you back them all up? How do you protect and secure data? How does vital user 15 access critical information on demand if there is no central source? These questions can best be answered by large systems.

Nonetheless, the threshold for mainframes is rising as OS/2 allows smaller systems to do so much more. Indeed, within five years, the term mainframe may be as artificial as the term desktop or laptop is today, mainframe designers say. Just as the imaginary distinctions between notebooks, laptops, lunchboxes and portables have blurred, mainframe designers see their systems downsizing, even as compact systems running OS/2 become more powerful and versatile. An IBM mainframe designer predicts, "In five years, we probably won't be selling our clients what we have traditionally called mainframes, but rather one hell of a giant server."

It's true that a new middle ground is forming fast. Where is the compass pointing? To the AS/400 and similar midranges, according to strategic planners working with such systems. If a souped up AS/400 wielding OS/2 connectivity can really manage the data needs for several dozen workstations, it will dramatically reduce the cost of computing for businesses around the world.

While connectivity is the corporate driver, productivity is the impetus for OS/2 as the Everyman system for which the world has been waiting. IBM minds are fond of referring to OS/2 as akin to reinventing the computer. For regular Joes, that is true.

The system's multitasking powers have already changed the

work styles and life styles of many—not by speeding them up, but actually by slowing them down. For years, desktop computers accelerated the human work style into a productive frenzy as users rushed from one task to another. Speed was addictive. You could never get enough megahertz to satisfy the mad compulsion to gain milliseconds. Remember the accelerator boards and turbo switches we tacked onto our 286s?

Simply put, speed is less of an issue when you don't have to wait for one application to complete before moving onto the next. If I don't have to quickly and frenetically save out of a 6 megabyte database so I can rush to the modem, or print a letter document, life becomes somewhat calmer. Now OS/2 allows me to switch back and forth between the word processing and database windows, which along with the communications window, are constantly open. I can send a 200-page report to the laser printer by spooling it to the limits of the disk. I'm not shaking my fist at the screen impatiently waiting to slip back to the DOS prompt. I'm making fewer mistakes and crashing less because I'm not rushing. And now I think I'll sip my coffee just a little slower and enjoy it longer.

Here is where Windows fails and OS/2 excels. Windows lets the user do ten things at once. OS/2 let's the computer do ten things at once. The genuine pre-emptive multithreading power of OS/2 actually helps you relax. Whereas Windows, which only interrupts any number of programs concurrently loaded, merely compels you to dizzily flip in and out of trying to remember where you left off. Not very relaxing and again, it promotes a speed complex.

Don't misunderstand. Speed is still going to be important to the high-brow OS/2 user. When running numerous applications, a lot of overhead is needed, especially when graphics are involved. The system likes to hog memory and cycles. But a 486 clocked at 25 Mhz or perhaps 50 Mhz will perform nicely for most average users. That set-up will allow numerous windows for spreadsheets, databases, communications, word processing, desktop graphics, utilities and a few other apps to round out the screen. But the compulsion to move up to the 586-class Pentium just won't be there for a lot of people.

Indeed, in many ways, speed will be an issue mainly for the machine—not the operator. I won't care how long it takes my desktop to zip a 10 megabyte database, because it's taking place in the background while I'm in Word composing a letter to my aunt. So what if multitasking ultimately slows the zip? Who's gonna know?

This concept becomes even more dramatic for the less demanding user—the three-app man using the DOS-driven 386 he moved up to in 1991. He wants to word process, use his modem and run a database. He doesn't understand a lot about computers—except that before OS/2 he had to wait for one program to finish before he could move to another.

Now, using OS/2, he can execute a big long query in his database, receive a modem transmission and finish that memo all

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simultaneously. He is a very happy camper. He will not be checking the newspapers to see if the 486 prices have come down yet. This guy—and millions of others who have 386s—is set, and will be for some time to come.

Downsizing for this person is not ordering a \$30,000 AS/400. It's buying a \$2,500 Texas Instruments 486 notebook, fully loaded and configured with OS/2, that will allow him to take his desktop home, or on an airplane. Oh yes, this person is happy. He thinks overhead is rent and salaries, he never knew that DOS was his operating system, and he will never investigate connectivity.

This man loves the hell out of OS/2, recommends it to his friends. And this is the guy IBM has targeted for its 800 toll free OS/2 order line. Sales off the 800 number are brisk and understandably so.

In many ways, the muscle computer will go the way of the muscle car. Today it's not important how well your automobile runs at 120 MPH, but how well it does at 55. OS/2 will allow productivity to be measured in multitasking versatility, not sheer velocity. It won't be long before most people who use OS/2 won't even know it. Just as today, most people who operate off DOS, don't know it. What will change for the common man is that instead of the immutable certainty of death, taxes and the inability to move to a second application until the first one is finished, he will simply understand that it is possible to whistle and walk at the same time. Indeed, a generation of newly enfranchised users may question whether it was ever done any other way.

Trickle down OS/2 may have some economic consequences that have to be confronted. Desktop obsolescence will decelerate for the average consumer. People who wouldn't think of booting the 286 they used two years ago, will be happy to hold onto to their 386s for some time to come. Those who are insistent upon attaining 50 Mhz with a 486 next year will probably hold onto those boxes for some time so long as OS/2 allows them to access more versatile and dynamic applications. Corporate hardware will also come way down as sky meets earth at the midrange horizon.

And there will be fewer machines—and in fact fewer people to run them. Simple office networks will have the same effect the Xerox copier had on typists. That's why proletariat societies such as pioneering Israel, the Soviet Union, Estonia and China kept photocopiers out of their countries. Every copier displaces 100 typists, an Israeli Foreign Ministry official once told me.

Autoworkers in Detroit will tell you the same thing about welding robots. And the musician's union still bans the kinds of electronic instruments that allow one or two keyboardists to dispense with dozens of orchestral musicians. Art directors can rejoice that desktop publishing and image-to-plate technology has revolutionized the publication field. But the graphics industry knows that thousands of typesetters, color strippers and engravers, are out of work.

Please don't whip out your bar graphs and tell me how many jobs are created by these new technologies. These aren't additional jobs. These are the new jobs that are available for those who have the training. For those who have spent a career doing it the old way, for the displaced, for the unhired, for the unadvanced, it's unemployment or career path dislocation. When Henry Ford mass produced horseless carriages, all the wheelwrights didn't suddenly leave their stables to work in Ford's factory in Dearborn, Michigan.

But in the evolving economic complex the computer age has powered, there will be big winners—and they will be in software. As OS/2 proliferates, the rush of hundreds of developers to churn out applications—OS/2able and otherwise—is creating a veritable whoosh in the galaxy.

The big dough ain't in hardware and a lot of people have figured that out. Maybe that's why IBM spun off its printer division into Lexmark, with a, "Thanks, we'll just keep 10 percent." Most telling was the Labor Day parthenogenesis the world witnessed when IBM abruptly created two IBM entities, one of which was a software company. You guessed it, OS/2 belongs to the software side.

OS/2—if handled right—will become the global connection. No, it won't obsolete DOS. By January, DOS 6.0 will ship because there are still millions of 8086 and 286 machines that will continue to hum for years to come, and OS/2's backward compatibility stops at the 386.

Windows NT—writer Wayne Rash says the NT stands for "Not There"—will undoubtedly debut sometime next year. Will it supplant OS/2 the Monday after it ships? A more likely scenario is the magical appearance of the migration path desperately sought by both sides. And because NT's backward compatibility will reportedly exclude a goodly number of Windows programs—programs which OS/2 will reportedly accommodate in its soon to be released update—the public will not face the "either or" drama on which that Microsoft is gambling.

NT will be big. But unless IBM ruptures its Achilles tendon in its mad scramble for market penetration—and the sorry track record of market boo-boos is unquestionably a long one—then just maybe NT will be lucky to win a bronze.

No one should overlook the super secretive developments Apple and IBM are cooking up at Taligent, codenamed PINK for the pink index cards on which Apple listed its programs during the negotiating process. That endeavor will undoubtedly spawn a new hybrid world standard machine and an operating system to match in the last years of this century. But knowing IBM's commitment to OS/2, Big Blue will never permit PINK to suddenly obsolete millions of satisfied OS/2 users.

The future of OS/2 is indeed one that will enable and synergize the individual as never before. Want to understand it better? Touch a key. The future is at your fingertips. And its name is OS/2. ♦

Edwin Black is executive editor of OS/2 Professional.



WILL NETWORKING SAVE OS/2?

BY WAYNE RASH JR.

If IBM had been right when they introduced OS/2, all of us would have been using it by now. DOS would have disappeared. There never would have been a threat from Microsoft Windows, and there certainly would have been no impending release of Microsoft Windows NT.

As it turned out, IBM wasn't right. OS/2 has been around for years, but it has yet to convert the 20 million or so MS-DOS users into using what IBM President Jim Cannavino claimed would be a "... better Windows than Windows and a better DOS than DOS."

The reason why the masses have yet to be converted is simply because OS/2 has yet to offer a clear advantage over MS-DOS for many users. Still, despite its slow acceptance, OS/2 has a lot going for it. Many observers claim that all it will take for OS/2 to displace DOS is an application that users can't do without. In this case, though, it may not be a piece of application software as is usually assumed, but rather the application of work that will bring OS/2 fully into the mainstream of personal computer operating systems. That application may well be networking.

Novell, Inc., makers of the best selling network operating system, Novell NetWare, seems to think that OS/2 is a force to be reckoned with, despite a perception by many that Novell is moving towards Unix for large-scale networking applications. "Novell is committed to OS/2's success," says William Donahoo, Novell's director of marketing for their Desktop Systems Group. Donahoo says that OS/2 may have already begun its long-awaited spurt of growth. He says that Novell's OS/2 kits have been "phenomenally successful." Donahoo added that sales of OS/2 related products have been far ahead of projections for Novell.

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According to Donahoo, part of the recent popularity of Novell's OS/2 products is due to the success—or lack of it—of Microsoft's Windows NT. "As NT gets farther and farther out, OS/2 will look better and better," Donahoo said. Of course, one of the reasons that OS/2 is looking better is because of the strength of OS/2 development efforts on the part of companies like Novell. Still, it takes more than a single company to ensure the success of any product in today's computing market, as IBM found out when it introduced OS/2 originally.

Part of IBM's problem at the time was a failure to appreciate the nature of the personal computer market place. OS/2 then as now required a significant investment in hardware required to support the operating system. Then, however, hardware was vastly more expensive, and OS/2 did vastly less. Most people couldn't afford the computers required to use OS/2, and even if they could, there wasn't any reason to do so. Now that is changing, at least in the world of networking.

The most important change has been the growth of enterprise networking. Enterprise networking is a relatively new concept in which a company ties all of its computer resources into a company-wide network. This network also supports the corporate

database, provides a pathway for corporate data backup and provides access to the company mainframe and to outside communications. Where OS/2 lagged in desktop systems, it excelled in network support.

In the world of networks, a key concept is client-server computing. This means that part of an application, usually the part of the program that the user actually sees, resides on a work station, called the client. The other part of an application, the part that manipulates and stores information, resides on a central computer, called the server. The server can be many things, but more and more frequently, the server is a high-end microcomputer running OS/2. Developers like OS/2 because it supports many tasks simultaneously, and because it supports applications that go beyond simple disk sharing that network file servers have always provided.

"In the '80s, file servers were important," says Mark Minasi, author of the best-selling *Inside OS/2* (New Riders Publications, 1991). "Novell leads the market now because of the importance of file servers then. Now client-server systems are really important." Minasi says that Novell NetWare requires too many compromises to really support client-server operations, although he expects NetWare to continue in its position of dominance in net-

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work operating systems. "People don't want a paradigm shift," Minasi says, explaining that networks probably won't change much for a while in terms of the software they use.

In short, Minasi is saying that file servers will run Novell NetWare for the near term, at least. That does not mean that OS/2 is out in the cold, however. In fact, it is NetWare's concentration on file servers that may ensure the life of OS/2. Part of this reason is due to Novell's use of software called "NetWare Loadable Modules." Many developers claim that these programs that run along with the file server software on a Novell server are as clumsy as their name implies. Instead, the trend is toward using separate computers to support database and other computing services. More and more frequently those other servers are running OS/2.

Adding to server proliferation is a practice known as "downsizing." Downsizing means taking an application that used to run on a mainframe computer, and installing it on a network-based computer running something like OS/2 or Unix. Because microcomputers are as powerful as mainframes were a few years ago, this works well. In fact, because users now run part of the application on their own personal computers, performance usually improves over the mainframe installation that is being replaced.

Minasi says that downsizing is pervasive, and predicts that virtually no software development will take place on mainframe computers. In fact, Minasi suggests that software ultimately destined for mainframes will be developed on network-based OS/2 servers. In other words, OS/2 isn't replacing MS-DOS, but rather mainframe operating systems.

Will OS/2 become the operating system of choice for personal computers? The answer is a clear "maybe." The prospects aren't particularly rosy, but they aren't insurmountable, either. The inertia of MS-DOS and the glitz of Windows NT will probably slow down any such move, and may prevent it. Instead, OS/2 will expand in places where serious data processing is being performed. Network-based database servers, image servers, application servers, development platforms—all will see solid growth by OS/2. As applications that require OS/2's unique capabilities are developed, a few work stations will move to OS/2 as well. The work stations most users have on their desks are firmly in the Microsoft Windows corner, though, until IBM really does deliver a better DOS than DOS and a better Windows than Windows. ♦

Wayne Rash Jr., is editor of *The Washington Post Computer Showcase*; contributing editor for *Corporate Computing Magazine*; columnist and contributing editor for *Communications Week* and consulting editor and Washington correspondent for *BYTE Magazine*. He is also co-author and author of many books on local area networking.

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OS/2 vs. the Media

"Don't believe everything you read in the newspapers!" This commonplace bit of modern folk wisdom seems to be stated more often than it is practiced. For the most part, we do believe what we read in the newspapers. That has been and continues to be a significant problem for OS/2.

Why? Because for the past two years the "newspapers" (in this case the computer industry trade press generally, and magazines that cover personal computers in particular) have been strongly biased against OS/2 (and IBM) and tilted in favor of Windows (and Microsoft).

That bias has taken many forms. In extreme cases, editors of major publications have overtly proclaimed "OS/2 is dead!" and declared Windows NT the certain winner over OS/2 before Microsoft had so much as shipped a beta copy of NT. A more subtle and more common form of pro-Windows and anti-OS/2 prejudice has been consistently to ignore the positives and emphasize the negatives of OS/2 while doing exactly the opposite for Windows. When all else has failed, editors have virtually ignored OS/2 even as they cover Windows in gushing detail.

People with direct experience with OS/2 2.0 know better than to believe the dismal portrayal that has dominated the trade press. They know that while OS/2 2.0 may not be perfect, it offers a far better and more robust operating system for IBM and compatible Intel X86-based systems than any other currently on the market. They know that it is head and shoulders above any alternative when it comes to building "industrial strength" application systems on personal computer platforms.

People who only read the computer media, though, have received a very different picture. That picture has begun to change recently—but very slowly and, it would seem, reluctantly. That's because the undeniable success of OS/2 2.0 in the first six months after its release is simply too much for even the most blatantly biased in the trade press to ignore.

Still, some diehard antagonists have acknowledged the operating system's new importance simply by stepping up their attacks on OS/2 rather than by admitting the system is clearly on its way to significant successes. Examples of negative treatment of OS/2

are not hard to find in current issues of most major computer industry publications.

Unfortunately, that negative treatment all too often finds its way into the general business press as well. While some of these publications are starting to develop an independent view of the industry, most still follow the lead of the trade press in their own reporting and commentary.

Much the same (if not much worse) is found in business news coverage on television. TV coverage of the computer industry has so far been extraordinarily naive and remarkably ignorant of even the most elementary facts of how the industry really works. Here, too, reporting and commentary follows the lead of the trade press with dismal regularity.

The unfortunate result is that key corporate decision makers, themselves often with little grasp of information technology, end up getting their impressions based upon the second-hand views echoed by business television or the general business press. Lo and behold, those views are derived from none other than the original biased views of the trade press.

Frequently, after one of my lectures, I find myself in discussions with technically capable Information Systems professionals who, through direct experience, are genuinely enthusiastic about OS/2 2.0 and its potential for their organizations. All too often, however, they say their own management is a major obstacle to acceptance of OS/2 in their organization.

When I inquire why that is so, I am typically told that so and so (who may be the CEO or CFO, a key division head or whatever) has formed the impression that OS/2 is a flop and that all the world is going to Windows. They tell me they face a serious uphill struggle to persuade the executive in question that OS/2 is not only alive and well but also the best tool for the job they've got to do.

There are many reasons why OS/2 hasn't carried better coverage. IBM made a major tactical error in virtually remaining silent about OS/2 from early 1990 until April 1991. Microsoft has also been very aggressive in seeking favorable publicity, rewarding those who wrote favorably about Windows with inside scoops

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COMPUTER WARFARE

Desert Storm only proved that the chips and drives of computers have become the latest battle front for military planners. Pentagon strategists have launched far-reaching plans to master computer warfare—defense and offense.

BY BARBARA K. BEZEK

As Iraqi President Saddam Hussein's troops stormed southward into the oil rich, swirling sands of Kuwait in August 1990, alarm bells rang out from the halls of the Pentagon that echoed across the U.S. defense industrial base—from California's silicon valley to Andover, Massachusetts, where the nation's most sophisticated antimissile systems are produced. The directive dispatched through the U.S. service commands to military representatives based in U.S. defense plants was unambiguous in its sense of urgency: U.S. military hardware sold to Kuwait, including 150 I-HAWK air defense missiles designed to destroy approaching aircraft at altitudes ranging from 8,000 to 15,000 feet, would soon come under the control of Saddam's forces.

At a feverish pace, U.S. aerospace executives and military representatives dug into secure logs, retracing the steps of the manufacturing process to determine exactly when, and how, pre-programmed countermeasures in the form of dormant computer viruses built into the software of U.S. weapons systems would take effect.

During the four months of the Desert Shield buildup and into the 44-day Desert Storm campaign, it became apparent that Saddam would not, or could not, make use of captured U.S. weaponry. Not one captured I-HAWK was fired against U.S. or coalition planes. Nor could the captured air-to-ground and air-to-air missiles be adapted quickly enough to the ejection racks and hard



Photo: U.S. Army. Illustration: Arlene Williams



WARGAMES

points of Iraqi's mostly French- and Chinese-made fighter fleets.

Nevertheless, the irony of U.S. equipment posing a military threat to U.S. forces has not escaped Pentagon planners. Pentagon officials are wont to discuss specifics of countermeasures used to protect against unauthorized use of U.S. systems or the special technical departments established within the military services to develop, install and encrypt millions of lines of protective and potentially debilitating computer code. Likewise, industry executives have been placed under virtual gag orders, deferring probing queries to Pentagon public affairs.

Dick Sherman, a spokesman for Raytheon Corporation, producer of the I-HAWK and Patriot missile systems, told *OS/2 Professional* that secret provisions are made in the event that U.S. weapons fall into the wrong hands. "I suspect there are weapon systems that are very unlikely to ever shoot down an American because there's stuff in that software that we can't talk about, contractors can't talk about and the Defense Department can't talk about," Sherman said.

Lt. Commander Ken Satterfield, Pentagon spokesman, declined to comment on U.S. countermeasures other than to offer, "We have our own safeguards built into anything we sell."

Winn Schwartau, president of Interpact, a Seminole, Florida, company specializing in information warfare, said Satterfield was probably referring to a process called "chipping," where manufacturers use specific, largely classified techniques to modify integrated circuits so as to assume long-term, remote control over the systems they produce. Schwartau says chipping usually takes place at the time of manufacture, but that countermeasures could also be retrofitted into upgraded versions of most military systems.

"This is a very complicated area and it's shrouded in secrecy. Most simply put, there are ways that the U.S. government, through its top military manufacturers, can maintain remote control over the systems coming out of their factories."

Along with Pentagon efforts to safeguard against the misuse of American-made hardware is an extensive, multibillion-dollar campaign to detect and destroy enemy-instigated computer viruses, bacteria, logic bombs and other forms of sabotage that pose a threat to national security and the ability of U.S. leaders to command, control and implement their forces. U.S. counterintelligence sources say this form of nonlethal warfare presents low-risk and high-payoff to enemies who view American reliance on high-technology, computer-driven systems as an Achilles heel to be exploited.

Bill Murray, a computer security expert with the Wilton, Connecticut-based Deloitte & Touche management consulting firm,

notes that the use of malicious viruses, trojan horses and worms work both ways, and with the improvement in U.S. efforts to detect and guard against such methods comes the ability to wage offensive nonlethal warfare against computer-dependent enemies. Nevertheless, Murray says damage caused by computer warfare is, in most cases, disruptive rather than destructive, with damage borne at the tactical, rather than strategic level.

The Virus That Never Was

Referring to news stories in April 1991 about the U.S. use of computer viruses to debilitate Saddam's command and control network as "apocryphal," Murray says, "Viruses cannot be targeted. Once you turn them loose, you can't tell what they are going to do or where they're going to go. So the use of them for strategic purposes is not possible."

Murray noted that there were cases of computer viruses during the Persian Gulf War, but that these instances involved U.S. computers being infected with U.S. viruses. He added that defensive measures against inadvertent infection has become a high priority among U.S. military planners and should remain so.

"Like most security threats, there is no absolute protection, but there is sufficient protection. And that's what we should be after. You can't protect against all viruses all of the time, but you can protect against most viruses most of the time," Murray said.

Magnetic Weaponry

More insidious than the erroneous, albeit well-publicized instances of viral infection in the Persian Gulf War, is the use of magnetic weaponry or high-powered radio frequencies to debilitate entire computer networks. Distinct from the categories of malicious software are magnetic bombs or guns that use electromagnetic pulse (EMP) and high-energy radio frequencies (HERF). Such forms of nonlethal warfare are often as effective as conventional destructive warfare in accomplishing missions.

Schwartau, through his weekly newsletter *Security Insider Report*, has documented instances in Operation Desert Storm where U.S. Navy Tomahawk cruise missiles were equipped with EMP warheads to render Saddam's front line air defenses useless. Further nonlethal damage was undoubtedly caused by the air delivery of EMP bombs, probably by F-117A stealth fighters, although military officials refuse to discuss the issue.

The military establishment has honed its development and delivery methods for nonlethal EMP over the last 10 to 15 years, sources told *OS/2 Professional*. Nevertheless, says Schwartau, the U.S. government and industry need to devote

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more attention to more nefarious uses of EMP by terrorists and paramilitary operatives.

"This stuff can be housed in a suitcase or in a backpack and can be used to shut down, for example, an entire electronics and computer system in an airport. This may not result in bloody, gory headlines for the evening news, but, for a terrorist, the result is operationally just as effective," Schwartzau warns.

HERF warfare techniques are also proliferating. Government laboratories at Los Alamos, New Mexico, and the Lawrence Livermore National Laboratory in California, are working on a variety of methods to deploy HERF weaponry. The most common deployment now known involves radio transmitters broadcasting extremely high directional power to overload target computer circuitry.

Again, Schwartzau warns that the use of HERF is fundamentally very simple for the local terrorist who can purchase adequate transmission devices from any Radio Shack outlet. "This stuff is necessary on the battlefield, but, no less important, is the ability to defend against it," Schwartzau says. He notes that HERF warfare might spread to the corporate world if business competitors believe they can sabotage rival operations through the HERF transmissions.

"If I want to put you out of business, I'll drive by your office every hour broadcasting this stuff and you'll never know what hit you," Schwartzau said.

Neil Monro, a journalist writing about communications and intelligence issues for the weekly newspaper *Defense News*, says Pentagon planners are beginning to exploit the benefits of informational warfare, including malicious software, EMP and HERF, in order to produce desired military objectives without the mass casualties normally associated with conventional warfare. In other words, destruction without bombs. According to Monro, in September the U.S. Army's Training and Doctrine Command at Fort Monroe, Virginia, prepared a 45-page concept of operations that guides the service as it develops strategy, tactics and acquisition plans for nonlethal warfare.

According to the document, a copy of which was provided to *OS/2 Professional*, nonlethal warfare is becoming increasingly desirable in the post-Cold War era, where the U.S. public has come to expect minimal casualties and where concerns about the environment and preserving infrastructure are at a high. "Nonlethality, by means of informational warfare, use of chemicals or lasers is becoming increasingly relevant as the threat becomes more oriented toward short-term contingencies," Monro said. He

added, "Why should the U.S. go in a country and bomb it into the stone age when, a month later, the bill for rebuilding that same country is likely to be borne by the United States?"

Monro, the author of *The Quick and the Dead: Electronic Combat and Modern War*, says informational warfare is beneficial not only for employment in wartime, but in developing the necessary countermeasures needed to protect U.S. systems and troops. "In order to defend yourself, you have to know what the bad guy can do ... It has taken the Pentagon a long time, but they've finally decided to invest significant resources in this area."

A recently declassified Pentagon memorandum, obtained exclusively by *OS/2 Professional*, provides an unusual glimpse into the extent of Pentagon planning for counterintelligence and security countermeasures. The 14-page document for senior civilian and military officials from Duane Andrews, assistant secretary of defense for command, control and communications, describes a strategic plan intended to "prevent the disclosure, loss, misuse or destruction of national security information, materials or the systems and networks used to collect, process, analyze, store or communicate that information."

The 10-year plan seeks to establish a flexible structure within which it can create and provide integrated counterintelligence and security countermeasures for both policymakers and war fighters. The structure, according to the document, will address the problems of identifying, characterizing and neutralizing intelligence threats; conduct risk and vulnerability assessments; develop standards and strategies for enhancing counterintelligence and security countermeasures capabilities; and will take advantage of technologies evolving from U.S. government, academic and industry laboratories over the next decade.

The document notes "the increasing vulnerability of information systems to high-technology threats, such as computer viruses [that will] pose additional national security concerns" and suggests ways to ease U.S. vulnerabilities. According to the document, thousands of pages of classified material can be carried in a coat pocket and millions of dollars worth of software can be destroyed with a phone call. To combat this problem, the Andrews plan calls for security systems to be built directly into military hardware from inception thus obviating the need for expensive, time-consuming and risky retrofits.

Moreover, the Andrews plan attempts to limit the amount and type of information generally shared among U.S. allies or among disparate elements of the American government. "Information that is crucial to decision making and war fighting (but that is not

continued on page 56

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26 DeScribe's novice mode simplifies the learning curve.

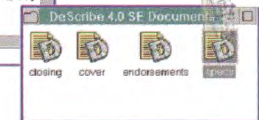
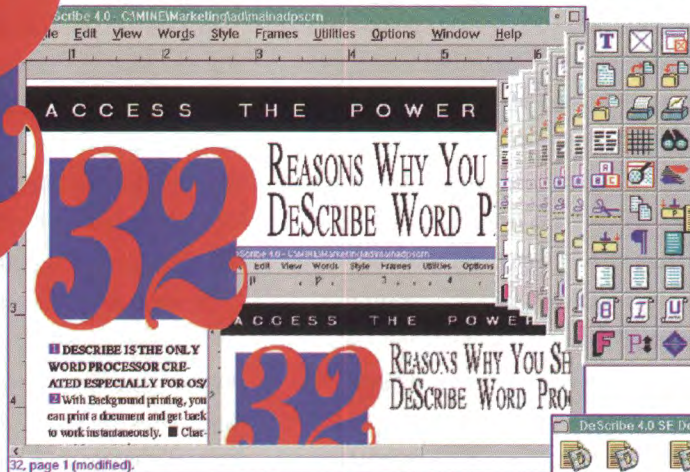
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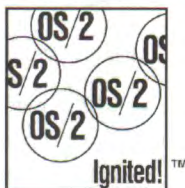
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DOT EXE

Software for OS/2

DeScribe 4.0

REVIEWED BY HERB TYSON

DeScribe is like no other word processor you've ever used. Part of the reason might be that DeScribe was originally intended as a kind of a hybrid word processor and desktop publishing application. Despite, or perhaps because of, its unique personality, DeScribe 4.0 has now emerged as a viable choice for OS/2 users. Earlier installments of DeScribe lacked some features that users regarded as essential. With version 4, most of the earlier "wish lists" have been fulfilled. Packed with 32-bit power, DeScribe is the only Workplace Shell-aware word processor on the market.

What's so different about DeScribe? First and foremost, DeScribe is object or frame oriented. Each part of a DeScribe document is a named frame. While at first this is a little hard to get used to, the cumulative result is that it greatly simplifies creating complex documents as well as simple document forms (like envelopes). In other word processors you can create movable frames—areas on the page whose contents move as the frame moves. However, frames somehow seem like clumsy afterthoughts. In DeScribe, the frame (which was called an object in prior versions of DeScribe) is part of the basic design. Want to change the margins? Don't look for left and right margin controls. Instead, you just drag the frame borders to where you want the new margin. Want to reposition an address on an envelope or label? Just drag the frame to a new location.

New Features

If you frequent the OS/2 sections on CompuServe or if you've ever called DeScribe, Inc., for technical support, it should come as no surprise to you that this is a company that listens to its users. This responsiveness is evident in the new release of DeScribe. One of the biggest changes is that DeScribe now has a draft mode. Earlier versions of DeScribe were full-WYSIWYG (what you see is what you get). DeScribe 4.0 now supports a configurable draft view—you can even set the font, point size, leading and indents you want used for draft view.

Another much-asked-for enhancement is an outlining view. DeScribe now has full outlining capabilities that even include optional nested automatic outline numbering. Like the outlining

feature in Microsoft Word for Windows, you can collapse an outline to show only the heading levels in a document. You can uncollapse just the current level, or all levels. Unlike Word for Windows, however, you aren't limited to using styles called Heading 1, Heading 2 and so forth. Instead, DeScribe 4.0 lets you specify which style to associate with each of the nine supported outline levels. You can split the screen to show the outline in one window and the full text in another window. Users who need outlining won't be disappointed by DeScribe's implementation.

DeScribe also sports a new feature called the Character Manager. The Character Manager lets you select fonts and characters at the same time. It bears some conceptual resemblance to the Character Map applet in Windows 3.1. DeScribe's Character Manager, however, lets you create a custom character palette containing as few or as many characters as you want. Moreover, the character palette can mix characters from different fonts—a sigma from the Symbol Set font, trademark from Times New Roman, a copyright symbol that takes on whatever font is in effect at the insertion point and a doohickey from a Dingbat font. When you

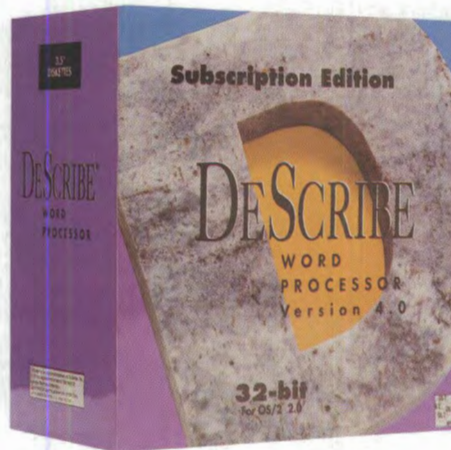
use the character palette to insert a character, the font information is transferred as well.

DeScribe also offers a keen word counting ability. Along with the word count, you also get readability statistics—Flesch reading ease, Flesch-Kincaid grade level, Gunning's Fog index, the number of long words, characters, sentences, average words per sentence, sentences per paragraph and average word length. Getting the readability statistics (for accurate word count) takes a while. If you just want a rough idea of the word count, you can get a word count estimate from the new Statistics function.

Basic Features

DeScribe has most of the features you would expect in a professional-grade word processor. It has a built-in spell checker, a dictionary (the kind that provides definitions and hyphenation points) and a much better than average thesaurus (for synonyms, antonyms, related words, contrasted words and compared words). DeScribe also has a built-in drawing module that lets you create and modify graphics in the document.

DeScribe's search and replace is especially useful. It supports two



The copy of DeScribe 4.0 provided to Herb Tyson for review was a final beta version. Officials at DeScribe have informed *OS/2 Professional* that the only changes made to the production version (released as this issue was going to press) were bug fixes.

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simultaneous search and replace sets. It also has a well-implemented method for pattern searching (sometimes called regular expressions). For example, by specifying "[A-F]" as the search string, you can search for any capital letter from A through F. Specifying "[0-9]" lets you search for any number followed by a period. DeScribe also provides for negative searching, for example, "[~0-9]" would let you search for any occurrence of "(" not immediately preceded by a number. These features facilitate working with complex documents, and also strengthen DeScribe as a programming editor.

A formidable array of document conversion capabilities is part of the package. Using licensed Word for Word technology, DeScribe supports importing and exporting in nearly 100 different word processing, spreadsheet and database formats, including WordPerfect (all versions); Microsoft Word (DOS, Mac and Windows); Signature; Ami Pro 2.0; Excel; Lotus 1-2-3; dBase III, III+, and IV; and many more. While the Word for Word technology isn't perfect, it's certainly a leap forward from the days when re-keying documents was the standard. Users converting from most major competing word processors will find DeScribe's built-in conversion capabilities more than adequate. DeScribe imports some 20 different graphics formats, including .ATT, .DXF, .TIF, .PCX, .PIC, .CGM, .MET, .WMF, .MSP and .BMP. Unlike

other word processors, DeScribe also lets you export graphics from DeScribe—as PM (Presentation Manager) bitmaps (version 1.x and 2.x), PM metafile format, as well as Windows 3.x bitmaps.

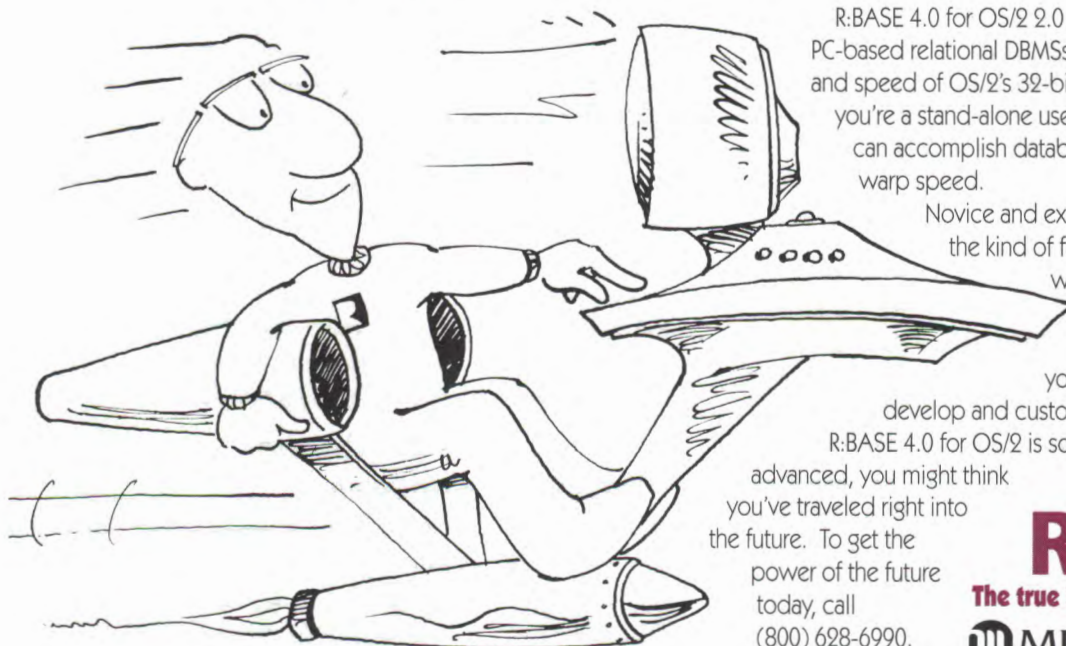
All the basic materials to get you started are available. Over 50 document layouts come with the program. Included among these are various formats for letters, envelopes, labels, invoices, proposals, reports, resumes, flyers and brochures. You can also create your own; but using one of their boilerplates can speed you on your way.

Nice Touches

There are some things about DeScribe that are quite compelling, even addicting. One of them is unlimited Undo. DeScribe can undo virtually anything you've done since the last save (to your document, of course; DeScribe can't fix broken coffee mugs). When you press Alt-Backspace, a small slider control appears. As you press the left arrow (or click the mouse on the appropriate control), you see each edit you've performed since the last save being undone. If you deleted a crucial passage, just step backwards until it reappears. Then you can copy it to the clipboard and use undo again to get back to where you were. If you use the Draw utility to draw a picture, you can use Undo to un-draw your picture. In fact, if you undo back to the beginning, you can then reverse the process (pressing the right arrow) and see your drawing take shape. Done this way, it makes a great "what am I drawing" game for toddlers!

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A second nice touch is something users can expect from more and more applications—multithreading. Multithreading essentially is multitasking performed within a single program. To see it at work, try printing something. Using almost any other word processor, you lose access until the printing is done. In DeScribe, when you issue the print command, DeScribe dispatches the print as a separate thread, and lets you keep on working.

A third nice touch is DeScribe's customizability. Anyone who spends much time with XyWrite or Signature rapidly becomes addicted to the ability to make any key do anything. One complaint about Word for OS/2 (and its better-treated cousin, Word for Windows) is that Microsoft disallows customizing the cursor keys, as well as a few others. Word also makes you jump through hoops to make assignments involving the Alt key. DeScribe has no similar limitations. DeScribe has two routes for assigning keys. You can assign your own macros (as well as any of the macros supplied with DeScribe) directly to keys—overriding built-in combinations, if you prefer. You also can assign keys to menu destinations (e.g., assign Ctrl-B to **Style... Attributes... Bold**). When you do that, the assigned keystrokes appear on the menu next to the command, to remind you of the shortcuts. You can, by the way, also put your own macros into the menu, making menu and key assignment a one-step process.

And don't overlook the fact that DeScribe remembers where

your cursor was when you re-open a document. Other word processors can be trained to do the same trick. With DeScribe, however, it's a native feature.

Since DeScribe also is Workplace Shell aware, not only can you drag and drop file onto the DeScribe icon, but directly into DeScribe itself. For example, you can open a drive object and drag a file to DeScribe's clipboard icon. Presto! The file is immediately copied to the clipboard for use in DeScribe. Similarly, you can drop a file onto the printer icon. Drag a file and drop it into the open DeScribe window and DeScribe immediately loads the file into another window. It's clear from DeScribe's behavior that it "knows" it's an OS/2 2.0 application—a refreshing change from the behavior of the competition.

Macro Language

DeScribe supports recording, editing and creating macros using DML (Describe Macro Language). Power word processor users—whomever they might be—will appreciate but also be disappointed by DML. On the one hand, DML has a wide array of commands and functions that let you automate virtually anything that DeScribe can do. On the other hand, there are omissions that some converts from Word for OS/2 (and Windows) and Signature will miss. Most conspicuous is the limited number of string-handling functions as well as the lack of user-designed dialog boxes. Another

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er lack is the ability to automate sending keystrokes to a dialog box or to another application. You can do quite a bit using the DDE commands, but you lack the pinpoint flexibility provided by Word for Windows.

Unlike Signature's SPL (Signature Programming Language), DML is very straightforward and easy to use. Also, unlike Word, each macro is stored in a separate file, which makes macros much more accessible than the template storage method used by Word. The macro language is fully documented in a macro manual that comes with DeScribe. This in itself is a nice touch since a number of other word processors make the macro manual a separate-order, extra-cost item. DeScribe also includes about 100 ready-to-play macros. These, along with the manual, provide an excellent jumping off point for learning and using DML.

On balance, most of the functionality you need is probably there, although you might have to use ingenuity to find it sometimes. DeScribe, Inc., has proven to be very responsive to user suggestions in the past. A sufficient number of requests for specific features could very well be rewarded in subsequent updates.

Loose Ends

Past users of DeScribe will recognize and welcome a number of changes. In the 32-bit incarnation, DeScribe 4.0 is noticeably quicker than the 16-bit and 32-bit versions of DeScribe 3.0. The array of new features is certainly welcome, perhaps even overwhelming. All that's well and good. However, a number of gaps still exist in the feature war.

Users who want footnotes that appear on the same page as the note reference will be disappointed. DeScribe 4.0 supports endnotes, but not footnotes. Also, there does not appear to be a straightforward and automatic way to insert page-to-page cross references. Users who require a built-in equation editor will not

find it here, nor will those who now seem to require a built-in grammar checker (now that Ami Pro and Word for Windows seem to have added grammar checking as a standard feature). DeScribe also does not support table math. However, it does provide DDE links with spreadsheets, which can ease that omission somewhat.

Another small flaw, in the author's opinion, is the lack of a good keyboard-only way to apply

styles. DeScribe now comes equipped with a style palette, which can be summoned with a click of the right button. Speed typists, however, don't want to have to take their hands off the keyboard. Instead, a quick Ctrl-key point-and-shoot method is needed. You can summon the style manager with a user-assigned keystroke and use the cursor keys to select the style you want to apply. Once there, however, you either have to click the **OK** button with the mouse,

or press the Tab key four times to highlight the **OK** button. Just pressing Enter, for some inexplicable reason, doesn't execute the **OK** button as it does in most dialogs.

In Sum

Despite a few shortcomings, DeScribe is now a formidable contender in the word processing feature war. As the only 32-bit OS/2 word processor (at the moment), DeScribe might easily win by default. Thanks to a dazzling array of conveniences and features, however, DeScribe might remain the tool of choice for many, even after Lotus and WordPerfect complete their 32-bit entries. Users whose business is words, and who appreciate having the ability to customize their word processing environment will find DeScribe the clear choice for some time to come, unless the OS/2 2.0 versions of Ami Pro and WordPerfect depart substantially from their current versions. On the other hand, users who absolutely need some of the features lacking in DeScribe might do well to wait.

Herb Tyson is a consultant to the computing industry, whose clients include IBM. He also is the author of several books, including 10 Minute Guide to OS/2 2.0, 101 Essential Word for Windows Tips, Word for Windows Revealed, and XyWrite Revealed.

IBM C Set/2 1.00

REVIEWED BY TODD B. CROWE

To fully exploit OS/2 2.0, application developers need a set of tools designed from the ground up to support the capabilities of IBM's powerful 32-bit operating system. IBM's C Set/2 is such a tool. C Set/2 is a 32-bit C compiler coupled with a 32-bit interactive, source-level debugger.

C Set/2 includes on-line help and documentation, an easy-to-use Presentation Manager installation program, support for IBM WorkFrame/2 and a set of C program examples. It does not, however, include a system linker or the system header files necessary to create OS/2 applications. These are available separately from IBM as part of the OS/2 2.0 Developers Tool Kit. For those who like to work in an integrated development environment (IDE), IBM WorkFrame/2 is available separately for C Set/2 and other compilers and development tools. Both the OS/2 2.0 Developers Tool Kit and the IBM WorkFrame/2 will be reviewed in future issues of *OS/2 Professional*.

By way of background, C Set/2 was written by IBM Canada and represents the first C compiler developed completely by IBM for OS/2. C Set/2 replaces IBM's 16-bit C/2 compiler and CL386, the 32-bit compiler that was shipped as part of the OS/2 2.0 SDK, both of which were written by Microsoft Corporation.

C Set/2 was commercially released last April, and so far IBM's support for it has been outstanding. Technical support is available from IBM both electronically, via CompuServe and a national

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BBS, and through a toll-free 800 phone number. Since C Set/2's release IBM has made available, free of charge, two official and several unofficial corrective service distributions (CSDs) for C Set/2. No software is perfect. Other software companies might follow IBM's example.

C Set/2 C Compiler

Some of the most important features of the C Set/2 C compiler are: support for industry standards, multithread support, a variety of different run-time library options, the ability to create dynamic link libraries and 32-bit code generation. Reviewing each of these features as well as some of the shortcomings of the compiler, plus the results of several benchmark tests, will help put the code generation abilities of C Set/2 into perspective.

The C Set/2 C compiler conforms to the ANSI C, ISO/IEC and Systems Application Architecture (SAA) C Level 2 standards. It is also compatible with the Microsoft C compiler. There is currently no support for C++, but IBM announced at the Software Developers Conference '92 in Boston in September that the next version of C Set/2 will include a C++ compiler. The C++ compiler is scheduled for release in the first half of 1993. A beta version of the C++ compiler is now available as part of the November release of the Developer's CD-ROM.

One of the key advantages OS/2 has over DOS and Windows is that OS/2 is a pre-emptive, multitasking operating system. Applications and dynamic link libraries written with C Set/2 are similarly able to execute as multiple concurrent threads. A set of fully re-entrant run-time libraries helps make this possible. C Set/2's multithreaded libraries are a welcome feature; developers no longer need to worry about restricting themselves to a subset of the run-time library as was required with Microsoft C and other 16-bit C compilers.

Other run-time library options available to developers using C Set/2 are: statically and dynamically linked libraries, a set of single threaded non-re-entrant libraries, libraries suitable for subsystem development and a set of migration libraries. The migration libraries are provided to ease migration from other compilers, especially Microsoft C. They include a large number of functions common in other compilers but not part of ANSI C or SAA.

The subsystem libraries are intended for dynamic link libraries and other applications where the default C run-time environment

is not necessary. Device drivers written in C are another example.

Support for device drivers is one area where IBM's C Set/2 solution is lacking. C Set/2 currently is not able to generate code for virtual device drivers. IBM has announced, however, that this support will be added in the next version of C Set/2. Another related area where C Set/2 is lacking is in support of assembly language. C Set/2 does not include a 32-bit assembler nor does it support in-line assembly code.

One of IBM's slogans for OS/2 is, "A better DOS than DOS, a better Windows than Windows, a better OS/2 than OS/2." The use of 32-bit, 386 optimized code is one of the predominant reasons why it is possible for IBM to make such a claim. The 32-bit code is generally much faster than the 16-bit code. Twice as much information can be moved in the same amount of time, arithmetic operations can work on large numbers in a fraction of the time and code for manipulating segmented memory can be simplified or

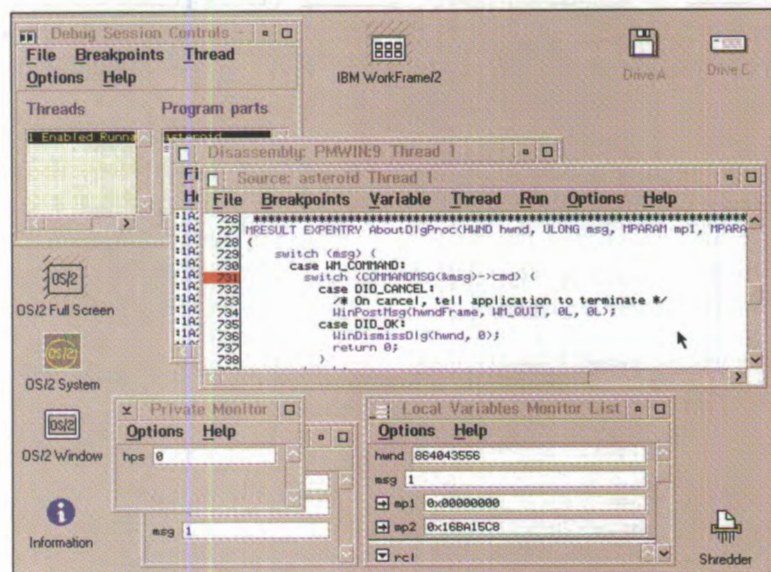
removed. The C Set/2 C compiler generates 32-bit code which has all of these advantages.

C Set/2 uses only safe optimizations to generate code for 386- and 486-based computers. It cannot be used to generate 16-bit code or the family mode applications with which OS/2 1.x developers and users may be familiar. In ads for C Set/2, IBM claims that the C Set/2 C compiler is "the best high-performance code optimizer in the business."

A series of benchmarks

were run as a way to gauge the code generated by the C Set/2 compiler. As a point of reference, the benchmarks were also run against Microsoft C 6.0a. Microsoft C was chosen because it generates highly optimized 16-bit code and because it was and is used by many developers to write 16-bit DOS, Windows and OS/2 1.x applications. It was not chosen because it is a suitable alternative to C Set/2 for OS/2 2.0 application development. It is not.

The benchmarks Short, Long, Float and Double execute a set of operations on the C type of the same name. Func simply makes a call to a function. Each set of operations is executed in a loop 10 million times. Dhystone 2.1 is Reinhold Weicker's benchmark program. All benchmarks were compiled and linked on a Zenith Mastersport 386SLe (386SL-25Mhz, no math coprocessor). LINK386 was used to link the C Set/2 executables, and the Microsoft linker was used to link the Microsoft C executables; only default command line options were used in both cases. The run-



The C Set/2 IPMD: note the integration of debugging tasks with PM interface.

DOT EXE

time results were later obtained by running the benchmarks on an IBM PS/2 Model 70/486-25 (PowerPC Platform).

Compile times and executable sizes are shown in Table 1. In all cases the Microsoft C compiler generated smaller executables in less time. Considering that Microsoft C is itself a 16-bit program and C Set/2 32-bit, the significantly longer compile times indicate that C Set/2 is not yet a mature product. Compile time is one important area where IBM needs to improve C Set/2.

The differences in executable size are more difficult to compare. Data and pointers in 32-bit code are in general going to be larger. What is more, if the dynamic link versions of the run-time libraries are used the executable sizes for C Set/2 generated code decrease dramatically. The size of Short, for example, dropped from 16,896 to 1488 bytes. The dynamic link library versions of the C run-time libraries may not be redistributed, however.

The run-time results are a mixed bag. The Microsoft C compiler generated markedly faster code for the (16-bit) Short benchmark, but C Set/2 beat Microsoft C in both the (32-bit) Long and Func benchmarks. The results from the floating point benchmarks are also very interesting; in both cases Microsoft C outperformed C Set/2 almost two-to-one. The results of these benchmarks are difficult to interpret but do leave some doubts as to the quality of code generated and the optimizations performed by C Set/2.

For most real-world applications, though, the Dhrystone benchmark results are probably the most important. The Dhrystone benchmark was designed to provide a realistic mix of the oper-

ations most often performed by normal applications. The results of the Dhrystone benchmark show that for these types of operations C Set/2 generates code which is more than twice as fast as Microsoft C. The Dhrystone benchmark results clearly demonstrate the advantages of 32-bit code.

C Set/2 Debugger

The Interactive Presentation Manager Debugger (IPMD), included with C Set/2, is a 32-bit PM application. It supports multiple program views, including source, disassembly and mixed source/disassembly. Stepping, simple and complex breakpoints are supported as well as two forms of monitors (watchpoints). Monitored variables may be displayed at all times or, optionally, only when in context. IPMD supports debugging of multithreaded applications, allowing individual threads of an application to be enabled or disabled.

The debugger handles pointers and indirect referencing. Structures, including nested structures, are displayed hierarchically. Special views are available to display the stack, local variables and registers.

On-line context sensitive help is also provided for the C Set/2 debugger. The IPMD help will be discussed later in the context of C Set/2's on-line help and documentation.

Overall, the C Set/2 debugger is a useful, well-designed tool. It nicely integrates all of the features programmers have come to expect in a debugger. It robustly handles conditions which were

	Compile Time (seconds)	Executable Size (bytes)	Execution Time (seconds)
Short			
IBM C Set/2	14.22	16,896	44.94
Microsoft C	4.46	3,577	28.72
Long			
IBM C Set/2	14.75	16,896	41.69
Microsoft C	3.78	3,577	69.07
Float			
IBM C Set/2	14.69	22,528	7.47
Microsoft C	4.18	22,288	3.81
Double			
IBM C Set/2	14.78	22,528	7.62
Microsoft C	5.85	22,824	4.18
Func			
IBM C Set/2	14.66	16,896	6.88
Microsoft C	4.84	3,577	17.43
Dhrystone 2.1			
	Compile Time (seconds)	Executable Size (bytes)	Execution (in Dhrystones)
IBM C Set/2	34.15	47,728	14,285.70
Microsoft C	21.47	35,272	6,540.00

IBM C Set/2 compiled with: icc -O -G3 • Microsoft C compiled with: cl -AL -Ox -G2

DOT EXE

impossible or prone to cause crashes with debuggers under OS/2 1.x. IPMD gracefully handles, for instance, single stepping through a PM application's message loop.

C Set/2 On-line Help, Installation and WorkFrame/2 Support

On-line help and documentation, a graphical installation program and the ability to integrate nicely with other products are features which are becoming commonplace in OS/2. C Set/2 has all of these features.

C Set/2 includes on-line, context sensitive help for both the compiler and the debugger. An on-line reference manual contains information on compiler options and messages, library functions, C statements and more. Three large printed manuals that are included in the C Set/2 package are also included on-line in Book-Manager format. The on-line help and reference documentation, however, is often incomplete. The on-line reference, for instance, describes that the function `time()` returns the current calendar time, but nowhere does it say that it returns the number of seconds elapsed

since 00:00:00 Greenwich Mean Time (GMT), January 1, 1970. Nor does it say that the argument type `time_t` is a `typedef` of `unsigned long`.

A Presentation Manager installation program is included with C Set/2. The installation program displays a README file in one window and provides a separate dialog box with installation options. On-line help describes each of the installation options. With the graphical installation program it is easy for the first-time user to install the C Set/2 package in less than 10-15 minutes. A full

installation takes about 8-9Mb of disk space.

Finally, C Set/2 comes with support for IBM's WorkFrame/2 product. C Set/2 includes a language profile which WorkFrame/2 uses to associate WorkFrame/2 projects with C Set/2. A DLL is also provided which graphically presents the C Set/2 compiler options.

Summary

IBM C Set/2 1.00 is a solid product. It offers all of the features necessary in a C compiler and debugger for the majority of OS/2 2.0 application development projects. It has some weak points, but these are to be expected in a new product. IBM's support for C Set/2 has so far been outstanding, and with the release of the Developer's CD-ROM IBM is continuing to improve this support. ♦

Todd Crowe is a UNIX/UNICOS kernel developer for Cray Research, Inc. He has been programming for OS/2 since April 1989.

IBM C Set/2 1.00

IBM Corporation
Old Orchard Rd.,
Armonk, NY 10504
(800) 342-6672

TECHNICAL SUPPORT
(800) 237-5511

LIST PRICE:

IBM C Set/2 v1.0: \$696

IBM C Set/2 v1.0,
WorkFrame/2 v1.0 and
OS/2 2.0 Developer's
Tool Kit package: \$375

Available October 5, 1992
to April 5, 1993

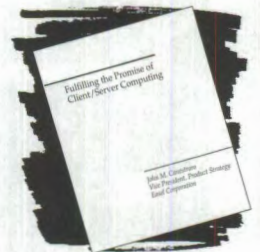
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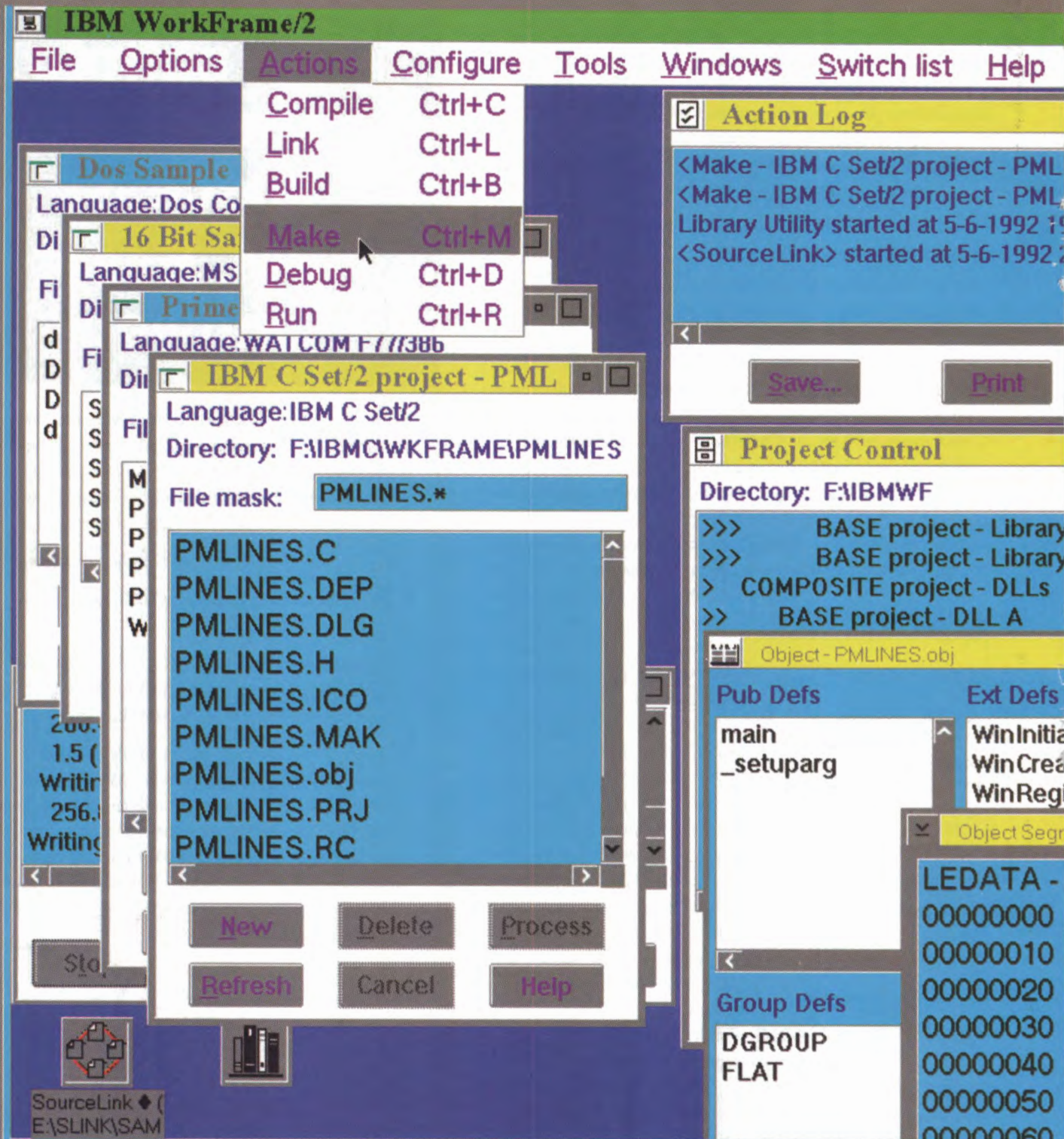
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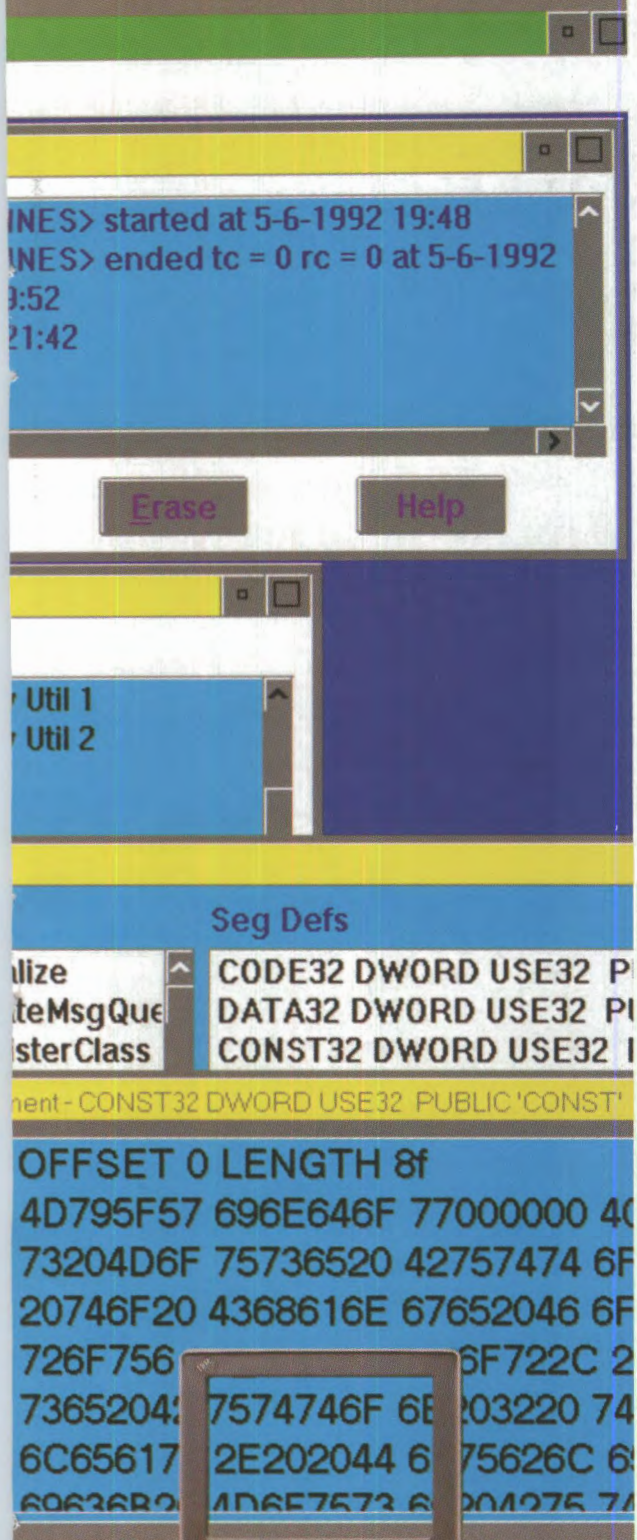
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Circle #9



OS/2



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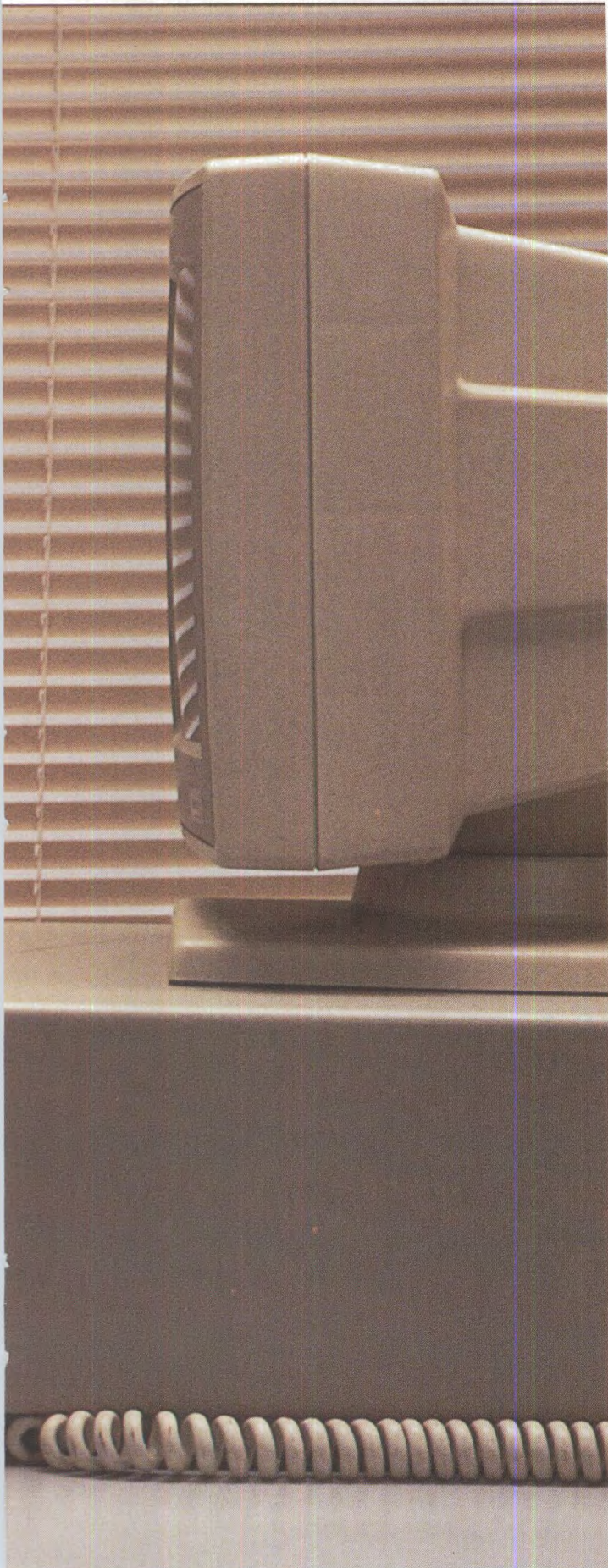


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Circle #14







MULTIMEDIA

Image & Vision for BUSINESS

Multimedia has already taken root in the education and information fields. But its biggest value has yet to show itself—as a tool for business.

BY HANK KIEWER

Just imagine if the account exec assigned to your best customer barges into your office with some really bad news: "You know that ZM-66 assembly we should have shipped last week?" The account exec pauses, and then blurts out, "We should have shipped it last Friday, and today the operator on our new milling machine incorrectly set the distance from the spindle face to the workpiece. He crashed the sapphire tipped touch probe into the workpiece. We already had \$23,000 in the piece, not to mention the cost of a new touch probe."

If that sounds like something that could happen to you, take heart. The day is coming when multimedia systems will help avoid the kind of costly hands-on mistakes that arise from lack of adequate training. Multimedia can provide the next best thing to hands-on training without the risks inherent in learning on the real thing. Indeed, it's a training concept that the air transport industry has used for years in its hi-tech flight simulators.

Think of the industrial applications. Machinists learn how to run machinery by pressing touch-sensitive computer screens that mimic the appearance of the machine's control panel. Pressing the wrong button or the wrong control results in "virtual" damage rather than real damage. Computer simulations respond with the appropriate sounds and sights. Right brain senses of sound and

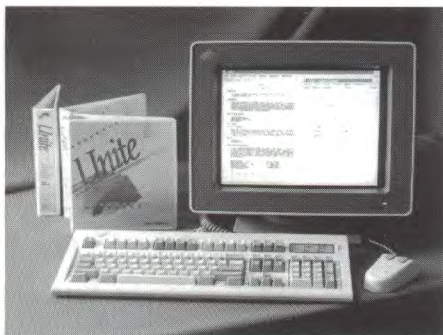
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Circle #4

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sight combine with left brain understanding of logic and accumulated knowledge so that effective whole-brain learning takes place in a fraction of the time that is required when traditional teaching techniques are used. The best part is that the new information is retained much better when sight and sound participate in the learning process. No manual, no matter how many line drawing sketches are included, can compete with the physiological and psychological power of multimedia training.

Multimedia education is just beginning to catch on in the business world. Individuals learn what they need to know when they need to know it. It isn't necessary to wait for the next scheduled class, nor is it necessary to take a class so far in advance that the material is forgotten by the time it is needed. Education is on demand.

By the same token, business can effectively use multimedia in the more traditional classroom setting. The possibilities are almost endless. Certainly, effective teachers and communicators have long known the value of sound and pictures to help convey ideas. Most of us have known teachers who could make a chalk board come alive by the skillful use of a few simple tools and a gift for capturing the imagination of their students. Using multimedia, not to replace but to augment the innate talents of instructors, means classroom demonstrations that take on an exciting quality of music, sound effects and animation. This will really educate our students!

Computers with multimedia are capable of livening up the old chalk board. But to make it happen, we need computer tools that are as easy to use as the chalk board. We have a way to go. Even today, there are a host of tools that assist teachers in putting together a planned presentation. But admittedly, it will take a lot of work and thought. And it is usually difficult to make unplanned deviations from the script. That's an important deficit our technology must overcome because spontaneity is something a teacher at a chalk board engages in as a virtual art form.

Unquestionably, multimedia's role will function differently in self-study and the more conventional classroom. In the first case, the student takes the initiative and controls the delivery of the material. This takes the form of selecting the topic and then responding to questions or initiating an action via either the keyboard, a mouse or a touch-sensitive screen. As technology evolves we can expect the computer to respond to written pen-based instructions, hand movements detected by sensors in a glove and voice. In the second case, the instructor controls the delivery of the material so that the computer supplements and sometimes replaces the chalk board to illustrate subject content.

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But both modes—self-study and the classroom study—face a similar problem. While all the functions needed for multimedia presentations are available, they exist in different products that don't talk to each other very well. That's a solvable problem, but the sooner it is solved, the better.

Education is but one of the benefits multimedia can bring to a corporation. Multimedia has tremendous potential for marketing by producing images and sound that capture the potential customer's attention.

Think about the implications for merchandising. Any merchandise that can be delivered via a printer such as tickets, markets or valuable information of any kind can be delivered on the spot and paid for by credit card. Mail order items can be displayed and even demonstrated, then ordered in the same way. The customer would literally let his fingers do the walking through the kiosk's computerized catalog, leaving with his confirmation notice in hand.

In this vein, the Minnesota Twins baseball team is selling seats at automated ticketing kiosks, one of which is at Comdex/Fall '92. Fans are given a good dose of Twins action video as part of the sales pitch. They can view the playing field from any seat before making a selection. After picking a seat, they insert their credit card, and the tickets are printed for them on the spot. The kiosks are run by Ultimea PS/2's linked to a seat inventory on an AS/400. This guarantees that fans have a full selection of available seats from any kiosk.

There are many other examples. Countless people have seen Disneyworld's multinational restaurant reservation system which integrates menus, booking times and even a direct visual line to a reservationist. A sleek touch-screen-based info terminal at the Nikko Hotel in Chicago allows tourists to touch explore any form of entertainment in any part of the city as charming map and logo graphics pop in and out. A medical illustration program called A.D.A.M. allows podiatrists to view a patient's normal foot, compare it to an injured or deformed foot and then virtually commence surgery, opening the foot and correcting the problem. The same system is now being used in medical colleges as a substitute for scarce cadavers.

Gazing into my crystal ball, I see an endless array of exciting possibilities. Medicine, law, real estate, insurance—I can't think

of any industry that cannot benefit greatly from the use of images captured and displayed by a computer. I'm not sure we can even foresee the many ways this technology will change the way we undertake day-to-day tasks.

Think of medical records displayed from a central database that combines chart notes and lab results alongside x-ray or MRI images. Nobody has to wait for records to be pulled and sent to the healthcare provider via mail cart or courier. The information can even be transmitted via telephone communication links over long distances. Computer generated "sticky" notes can be pasted over x-rays and charts and removed, modified or replaced with the touch of a few keys or the use of a special pen.

In similar fashion, an insurance company can scan or photograph forms, accident reports, signatures and photos into an image database along with appropriate textual information. The computer can allow the claims department to add information in the form of "sticky" notes or additional documents and associate these with any of the scanned documents. Claims can be processed in record time with a minimum of paper shuffling. Since the information is stored and retrieved electronically, the documents are available to as

many people and procedures as necessary to process the claim. Since everyone involved is looking at the same information, this process is superior to having multiple hard copies which could conceivably carry redundant information, or worse, conflicting or incomplete content.

Imagine real estate terminals around the nation that allow about to be transplanted executives to shop for homes and neighborhoods, viewing everything from area schools and shopping, to the streets within a community, to a video tour of the home for sale. Imagine court records and legal reference systems that combine not only transcripts and motions, but tapes of testimony and video displays of the evidence.

Many people are anxiously awaiting 21st century technology where the rubber meets the road as highways get smart, transmitting tourist, mapping and transit flow information to cars rigged with receiving antennae and special display terminals. An experiment is underway right now in Orlando, Florida, transmitting map information to specially equipped rental cars.

*Work flow
patterns chained to
paper shuffling will
be radically
transformed.*

MULTIMEDIA

Images from a scanner, camera or those generated directly by a computer or other imaging device will undoubtedly replace many of today's paper documents, photographs, blueprints, mechanical drawings and microfilm. Changes in the way we file and retrieve image information is certain to alter the way we work and the way we think about tasks associated with information. Work flow patterns chained to paper shuffling will be radically transformed.

Collection of information will also undergo radical changes. One of the most restrictive collection bottlenecks, the keyboard, will become less important as a vehicle for data entry. I expect that the impact on computing will be similar to the changes brought about by the use of the telephone to supplement written communication. (I wonder whether Thomas Edison envisioned answering machines and voice mail!)

My experience tells me that a system that handles image information must be able to share information only with those who rightfully need the information. Today, the issues of data sharing and security are addressed in mainframes and minis, but are a bit more difficult to handle on micros. While some prophets are predicting the demise of mainframes and midrange computers, I counter that regardless of what you call tomorrow's computers, they will need to provide the data server and security capabilities found today on larger systems (hosts) and will need to handle far greater volumes of information than hosts do today.

I'm sure that large networks of micros will play an important role in future computing and that neural networks will allow a tremendous advance in finding and collecting related information from diverse sources. But I also believe that the speed of light is a limiting factor in sending signals

between nodes in such a network. Thus, for some applications, distance and distribution become a disadvantage. Unless we find a way to break the speed-of-light barrier, I expect host concepts (if not host technology) will be with us for a long time to come.

How well we are prepared to anticipate

and capitalize on the changes that are around the bend will be a defining character for multimedia pioneers. ♦

Hank Klierer is a PC and AS/400 consultant and owner of Rochester Systems Advisors, Rochester, Minnesota.

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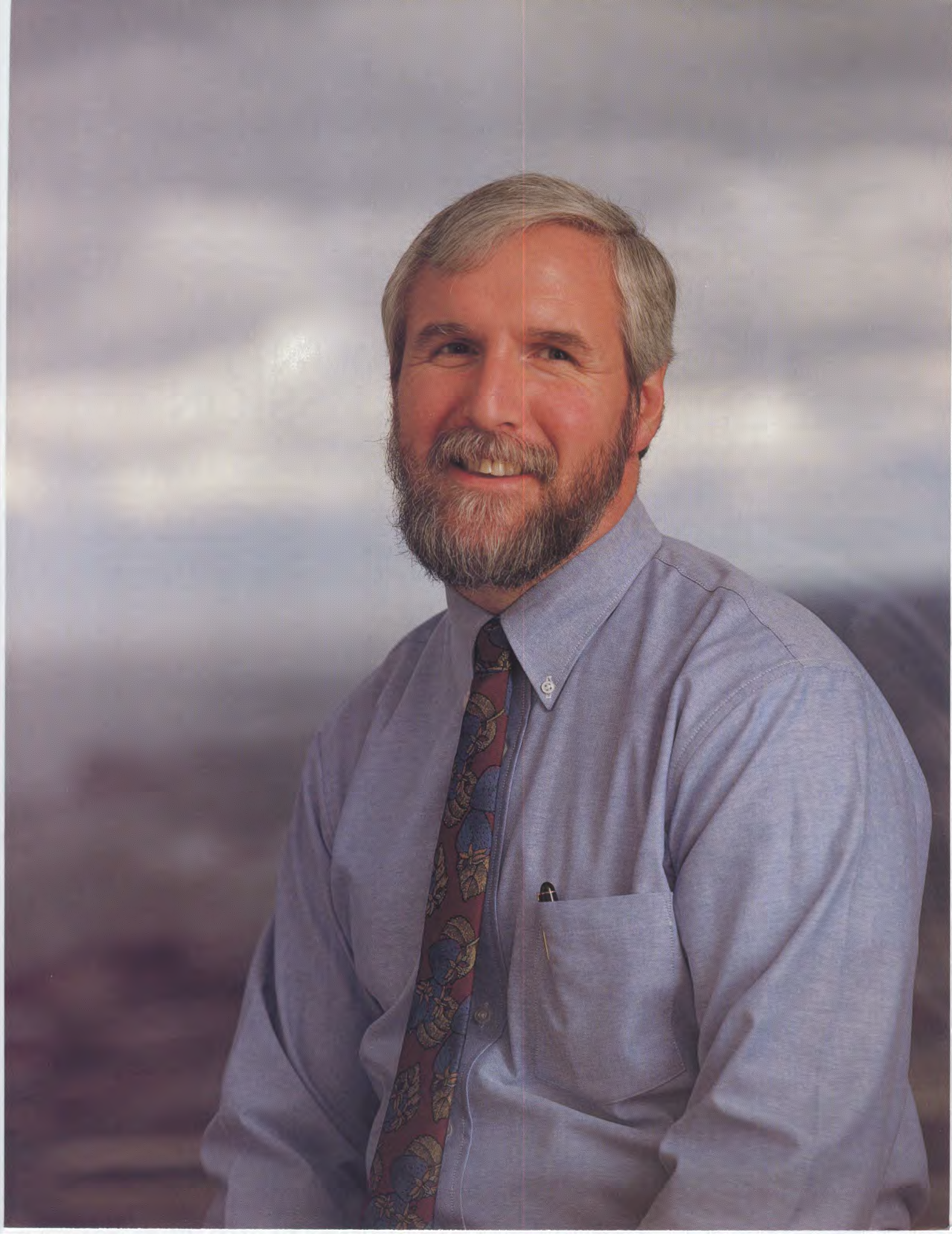
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Circle #8



USER PROFILE



OS/2 Aficionado

James Gilliland of BP-America is known as an OS/2 pioneer and staunch advocate. He believes the system empowers work styles. But he has another persona as a folk music deejay.

BY ROBERT LONG

There is literally no escaping Jim Gilliland. Flip through the pages of some of America's most popular computer magazines and you'll find his articles. *LAN Technology*. *Information Technology at Work*. He's there, countering the many critics who have for years blasted OS/2 in the computer press. Or browse through a conference on FIDOnet, one of the nation's largest computer bulletin board networks, and there too you'll find Gilliland, the elected moderator of the popular OS/2 topic field. Heck, if you're in Cleveland try to avoid him by turning on your radio, and you just might find him controlling the airwaves on WRUW FM-91.1, a local station. Yes, he's even there, hosting a two-hour segment dedicated solely to folk music each Saturday morning.

Inside what he describes as a "typical" office—wood furniture, Picasso poster hanging on the wall, picture of the wife and kids—Gilliland punches away at a 486 PS/2 Model 90. Behind him looms the city of Cleveland, Lake Erie visible from his office window. Outside his office door stand dozens of cubicles, each inhabited by one of Gilliland's clients with-in British Petroleum's tax department. It is here that Gilliland performs his magic.

As manager of tax systems for BP-America, Gilliland has become somewhat of an OS/2 pioneer. Nearly three years ago, the DOS operating system used by Gilliland and his clients began to display "serious limitations"—its 640K memory limit and inability to multitask among others. DESQView, Windows and DOS were all considered along with OS/2. In the end Gilliland selected OS/2, a system he had been using himself at home for two years. Thousands of tasks later, Gilliland's decision now stands as a model that other companies and divisions may be wise to follow soon.

"Because OS/2 has the capacity to allow multiple threads, it allows tasks to organize themselves to continue activity. With other operating systems, the CPU just spins its wheels," Gilliland explains. "We haven't found anything that comes close in terms of reliability. We have a good number of users who can benefit from a system that allows them to do more than one thing at a time."

Gilliland points proudly to a recent office survey in which all participants elected to continue using OS/2 rather than return to DOS. His clients report greater productivity since the switch, Gilliland says.

Gilliland first began working for British Petroleum in

USER PROFILE

1974, when the company was known as Standard Oil. Four years later, he graduated from Cleveland State University with a degree in computers and engineering science, "long before computers were the rage." Since then, it's been a steady climb to the top for Gilliland, who admits no boredom in remaining with the same company for nearly 19 years.

"One of the nice things about being a system professional is that you're never in a rut," he says, discussing a networking project that would connect BP offices in Cleveland, Houston and Anchorage. "At some point, you always move on and tackle something new and different. Even within a project, the different kinds of tasks required of you are so varied that it keeps you interested."

Gilliland believes "OS/2 is just as valuable for a clerical person as for a manager," he says. "My approach has always been to empower my people. I try to make all of my people managers. I treat them as peers. I encourage the group to work as a team."

If there's one place where Gilliland must occasionally flex his muscles, it is FIDOnet's OS/2 conference. The topic enjoyed only limited success when it debuted four years ago, but has since developed exponentially and spawned two sub-topics. Now, the main conference logs more than 200 messages each day, each of which is read by Gilliland, the topic's moderator. It is his job to keep his fellow OS/2 enthusiasts topical and reasonably polite. Gilliland says the board allows him to "speak" daily with residents of Canada, Sweden, Australia and Singapore, among other countries.

There's more to Gilliland, however, than just OS/2 and British Petroleum. Come Saturday morning, you'll find him interfacing with a different brand of fanatics. You see, Gilliland—behind the pseudonym "Jimmy Wilson"—hosts a weekly presentation of folk music titled "Roll Away the Dew," that, along the way, has "built up a small but dedicated audience." Well known within the local folk music scene when the show's previous host stepped down in 1980, Gilliland was a natural for the position. Sort of.

"The folks at the station really wanted to continue the program, even though I knew absolutely nothing about radio," he explains. "During my first couple of years on the air, I always experienced some degree of stage fright."

Although radio remains a favorite pastime for him, other forms of the media—namely the press—are a sore subject at times for Gilliland, who feels OS/2 hasn't been given a fair chance by many



computer magazines. Publications such as *InfoWorld*, *PC Week* and *PC Magazine* are only now beginning to do an about-face after spending much of the last two years criticizing the operating system for its supposed lack of hardware support, weak applications and inability to run DOS and Windows applications. Those issues have all been "put to bed," according to Gilliland, who believes the large wave of new users now purchasing the system is partially attributable

to improved media coverage. Indeed, two best-selling computer books, *Inside OS/2 2.0* and *Now That I Have OS/2 On My Computer*, are both directed at beginning OS/2 users.

All campaigning aside, Gilliland is the first to admit that OS/2 is not perfect. In fact, many of his suggestions echo those of the system's greatest critics. Gilliland only wishes more people would try to overcome such problems rather than avoid them altogether.

"I've found that anybody who has discovered OS/2 comes away saying, 'I won't give this up,'" he says. "Those not using OS/2 haven't tried it. They've read stories in the press and say, 'This isn't for me.'"

"The biggest thing I think OS/2 needs now is application. No more bells and whistles," Gilliland continues. "It's just a question of how soon vendors will wake up to the huge market of OS/2 users out there." ♦

Robert Long is assistant editor with OS/2 Professional.

TNT

TIPS AND TECHNIQUES

BY GORDON SCOTT

Using OS/2 2.0 for the first time is a bit like leaving Kansas for Oz with two exceptions: all the munchkins are customizable and you don't need any ruby slippers. The new graphical user interface, dubbed the Workplace Shell, is the icon-filled screen that lets you order up your application. It does take a few minutes to get used to. There are so many options for customizing it, that you can get bogged down just choosing colors for them all. However, once you've adjusted the Workplace Shell to your liking, you'll feel right at home every time you use your PC.

If you are among those users trying to come to grips with the Workplace Shell, this column can help you. It contains ten tips and techniques for using the Workplace Shell's features to your advantage. These suggestions by no means represent the single best way to use the Workplace Shell. But with these suggestions you can tailor the OS/2 desktop to reduce clutter without sacrificing power and flexibility.

Make your system easy to modify by creating shadows of objects.

How to do it:

The quick way:

- Click on the icon of any object with mouse Button 1.
- Press and hold down the Ctrl key, the Shift key and mouse button 2 simultaneously.
- While still holding down the keys, press and hold mouse button 2.
- Drag the mouse pointer to the folder, or place on the desktop, where you want to put the shadow.

The standard way:

- Using mouse button 2, click on the icon of any object.
- Select **Create Shadow...** from the pop-up menu.
- Select the folder where you want to put the shadow.

- Click on the **Create** push button.

What this buys you: flexibility.

A shadow is a special copy of an object with two important characteristics. The first is that any changes you make to the shadow are reflected on the original object. For example, if you create a shadow of a program, and then decide you want to change the icon that represents that program, all you have to do is change the icon of the shadow—the original program automatically adopts the new icon. The second characteristic is that if you move or delete the shadow, the original is totally unaffected. What this means is that you can create and delete shadows with no danger of disturbing the originals. By using shadows you could safely store all your programs in one place, and work only with shadows to configure the desktop each time you want to change things around. There is no penalty to your system's performance. It's just as quick to work with the shadow as it is to work with the original.

Place a shadow of the Master Help Index in the startup folder for the first two or three months that you are using OS/2.

How to do it:

- Create a shadow of the Master Help Index object.
- Move it into the startup folder.

What this buys you: quick access to simple procedures.

The Master Help Index is full of good information about using the Workplace Shell. Its innovative notebook-style design makes it easy to navigate and simple to use; however, it does have one shortcoming. It takes several seconds to activate after you double click on its icon. The reason it takes so long is that it combines the online help from many different sources into one single information source. Once you start the Index, it

performs well. So to make the best use of this valuable resource, put it in your startup folder. That way the time of starting up the Index is added to your system startup—where it goes unnoticed. When you use the Master Help Index this way, minimize it (instead of closing it) after you're through using it for help. That way you can make it appear quickly by selecting it from OS/2's Window List (holding down the Ctrl key and tapping Esc).

Create a collect-all storage folder.

How to do it:

- Create a folder from the desktop's pop-up menu, or use the OS/2 system folder.

What this buys you: reduced clutter.

This single location for storing all your objects allows you to make as many shadows of them as you want, while keeping them in a single easy-to-remember group. If you have many objects within this folder, you may want to create subfolders to divide them up. Too many icons in one folder can slow down the system when it tries to open and display the contents of that folder.

Keep only your most frequently activated objects on the desktop.

How to do it:

- Identify the objects you will have to click on the most during eight hours of time.
- Create shadows of these items and place the shadows on the desktop.

What this buys you: efficiency.

If you have to open and close a file or program several times in a day, then you want to have it immediately accessible. Such an object belongs on the desktop. Another candidate for desktop position might be an icon for a printer, fax or modem.

If your most important icons are on

TIPS AND TECHNIQUES

the screen, and you keep them somewhat few in number, then you can locate the one you want without even thinking. Too many desktop icons force you to spend unproductive time moving windows around.

NOTE: Don't mistake your all-day programs for your most frequently accessed programs. A program you start once and leave running all day, only to shut it down at the end of the day, has a more appropriate place than the desktop (take a look at the next tip).

Put shadows of all-day applications into the startup folder.

How to do it:

- Open the Startup folder (its default location is in the OS/2 system folder).
- Create shadows of the program icons you want to have started up when the system starts.
- Place the shadows in the startup folder as you create them.

What this buys you: space.

When you automatically start these applications and leave them running all day, you save a little time each day—but not that much really. What's more important is the space on the desktop you save. There is no need to have these types of programs on the desktop. If you put them in the startup folder and leave them running all day, then they will always be available through the Window List.

Examples of programs that are good candidates for the startup folder are terminal emulation programs, LAN connections, desktop calendar applications or other often-used utilities.

Use short names for your desktop icons, or eliminate names completely.

How to do it:

- Move the mouse pointer to the name of the icon you want to change.
- Hold down the Alt key and double click

mouse button 2.

- Change your icon name.

What this buys you: space.

In a graphical environment, open spaces on the desktop become valuable. Every little bit of space you save creates room for any new tool that you need on the desktop. Any space taken by an object that you rarely interact with represents a poor use of screen real estate. With icon names, like urban planning, tight spaces mean tall and thin, not short and wide. If you need long icon names, make them multiple lines of short lengths rather than long names on one line.

You'll be surprised how much space this can provide. For example, if your average icon name length is 12 or more characters, and you have a 1024x768 display, you'll be able to fit about 11 objects in a line across the width of your desktop. If you shorten those names to eight characters or less, you'll be able to DOUBLE the number of objects on that line. This opens up a great deal of potential space for useful tools, programs and frequently used documents.

NOTE: You wouldn't want to shorten or remove ALL of your icon names, just the most frequently used ones that sit on your desktop. After a couple of weeks, you don't need a lengthy icon title to remind you what the icon represents.

Move the shredder off the desktop into your storage folder.

How to do it:

- Open the storage folder.
- Drag the shredder icon to that folder.

What this buys you: space and safety.

The shredder object is an interesting response by IBM to similar objects on other systems. The shredder is actually nothing more than a graphical delete utility. Ironically, the design of the Workplace Shell makes the shredder redundant. Here's why: all objects in the Workplace Shell, by definition, must have a pop-up menu. On every pop-up menu the delete

option is a standard feature.

Deleting an icon from the pop-up menu has three benefits over deleting with the shredder. First, it saves you at least one mouse movement; second, it reduces the opportunity for error; and third, it's quicker.

Once you get used to deleting objects by using their pop-up menus, you'll hardly ever use the shredder. Move it into storage for those times where you might really need it—which will be few.

Place an OS/2 window on the desktop, but not a DOS window or an icon for Windows applications.

How to do it:

- Create a shadow of the OS/2 Window in the Command Prompts folder inside the OS/2 system folder.
- Open the settings notebook for the OS/2 window.
- Select the Window page of the notebook.
- Select the radio button to Minimize window to desktop.
- Select the radio button to Create new window.
- Close the settings notebook.

What this buys you: space and a better command line.

The OS/2 window is the only command line interface you need. Since most OS/2 users got their start in the DOS world, some find that they need the opportunity to look at the C:> prompt occasionally. Others have become so proficient at using the command line that it scarcely makes sense to learn a new way to do some of those DOS tasks. For whatever reason you want to look at a command line interface, the OS/2 command line will suffice. In addition to its own features, you can also call DOS commands, DOS applications and even Windows applications from the OS/2 Command line. You simply type them in as though you were in a DOS window and OS/2 starts a DOS session to handle the command while leaving the OS/2 session

TIPS AND TECHNIQUES

intact. The DOS box is redundant for everyday purposes, so put it in the storage folder and put a more useful application on your desktop.

NOTE: Some DOS programs, particularly terminate-stay-resident programs, when run from the OS/2 command line will execute and suddenly disappear. To avoid this annoyance, type START/WIN before the name of the program you want to run. This keeps the DOS window on the screen even after the program is done, so you'll have to close the window yourself once you're finished with it.

Select a small, but readable font and size for your shadow names.

Select a dark color for screen background and a light text color for shadow names.

These last two tips are designed to help you optimize space on your desktop. If these suggestions offend your personal

tastes, you can probably find a similar way to accomplish the same thing.

To make these changes, you need first to create or modify a window scheme.

How to do it:

- Double click on the scheme palette icon (its default location is in the System Setup folder—which is inside the OS/2 System folder), and the scheme palette displays.
- Select any scheme you want to change by clicking on it once.
- Click on the **Edit scheme...push button**.
- Select the window area you want to modify.

For screen background and shadow text color

- Click on the **Edit Color...push button**.
- Select the color you want.
- Close the color dialog box.

For shadow text font

- Click on the **Edit Font...push button**.
- Select a font you like (Times New Roman and Helvetica both take less

space than the system font).

- Select the smallest readable size of that font.
 - Close the font dialog box.
 - Close the **Edit scheme** dialog box.
- Once you've made the changes, you can now apply them with one step:
- Hold down the Alt key and drag the new scheme icon over to the desktop.

What this buys you: space and readability.

These modifications will allow you to reduce the amount of space your icon names take up, while at the same time making them easier to read. The lighter text on darker backgrounds appears larger than darker text on light backgrounds. Your eye's perception of this combination will help compensate for the smaller font size you may have chosen. ♦

Gordon Scott writes online help for OS/2 applications developed at IBM's Santa Teresa Lab, San Jose, California.

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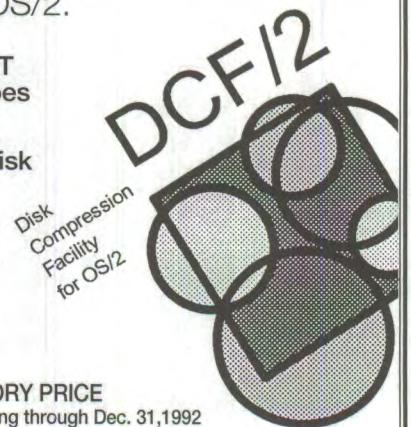
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Will OS/2 Breathe

Photo: Leonard J. Eisenberg



"My phone rings off the hook. Customers are telling us they want OS/2 applications, and they want them in a big way."

Recent financial successes at Lotus have people smiling. But OS/2 proponents at the company say that their success with new OS/2 software is more than financially rewarding. Intellectually, it has helped the company feel on top.

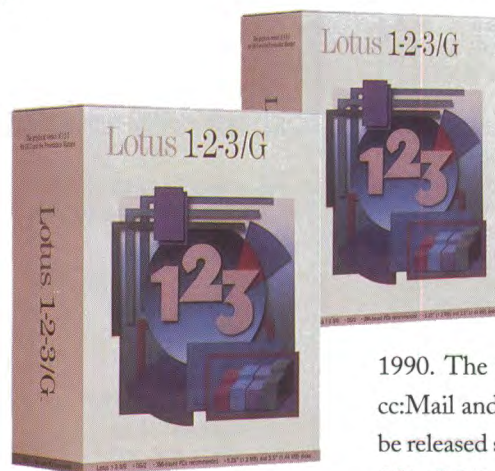
BY ROBERT LONG

When you work for Lotus, one of the world's foremost software developers, you don't appreciate hints at failure. After all, remaining a competitive force within the computer applications market has always been as simple as 1-2-3. Literally. Yet that's exactly what occurred within the company recently when significant investments in OS/2-related development didn't initially pan out, sources assert.

Only since the beginning of 1992's second fiscal quarter have sales taken such a jump as to prompt optimism. But industry sources indicate that the improved sales figures, combined with increased interest in OS/2 version 2.0, give Lotus developers reason to leave their doubts behind. Indeed, market observers claim Lotus is now primed for control of the OS/2 marketplace throughout the coming decade.

When OS/2 debuted in 1987, Lotus had already begun work on a graphics spreadsheet for the system. Lotus 1-2-3 was eventually released in late 1989, and was followed by Freelance Graphics in late 1990. The company has since delivered two other applications, cc:Mail and Notes. In addition, a fifth application, Ami Pro, will be released sometime within the next six months as the company's fifth OS/2-oriented program. The cost of all this development? Tens of millions of dollars, according to Jim Burnham, Lotus' marketing manager for 1-2-3 and OS/2. The payoff? Very little at first.

"The OS/2 market was not exactly big," Burnham admits. "We invested tens of millions of dollars in product development, and we haven't seen a large return on that investment. Frankly, there is some



New Life into



skepticism that I [still] have to overcome within Lotus that OS/2 is going to be a significant market."

Burnham isn't the only one who has felt apprehension in relation to Lotus' OS/2 development. "You could talk to many people who would say this was Lotus' biggest mistake and that it actually slowed our growth," says Richard Eckel, a Lotus company spokesman. "I don't know that I agree with that analysis. It depends on which camp you talk to."

This "spotlight today" mentality is often typical of American firms, which tend to look for immediate quarterly results rather than long-term gain. Corporate jitters are somewhat understandable when one contemplates the vast economic resources expended on a particular project. Lotus officials apparently were concerned with the amount of money they could commit to what Burnham describes as a "speculative risk."

"The danger with any company is that it doesn't grow on that base of experience when expanding into related fields," explains Donald DePalma, a senior software analyst at Forrester Research in Cambridge, Massachusetts. "Lotus has had a couple of false starts moving out of their core competency."

Once the excitement generated by the development of several new applications in 1990 dissipated, it became difficult—an "uphill battle," Burnham says—to revive interest within Lotus in OS/2. Many Lotus officials, frustrated by the lack of immediate results, fostered the attitude that "seeing is believing." The task facing Burnham and others whose function is to protect future market share and development was to prove that OS/2 offered a profitable future.

Burnham's patience, however, has finally begun to pay off. He argues that it is only a matter of time before the multiplying numbers of OS/2 users catapult sales to never-before-seen levels. He asserts that OS/2 sold only 1,000,000 copies between the system's 1987 debut and the end of 1992's first quarter. During the last five months alone, that figure has doubled, according to Burnham.

Naturally, the increased OS/2 sales have generated a greater demand for Lotus applications. It is expected that individuals making the jump from DOS will comprise a large portion of Lotus' OS/2 related sales because of their experience with the company's products on the desktop. "We've seen increasing interest in OS/2 products," says Eckel. "Skepticism is overcome by success. As OS/2 takes a larger percentage of the operating systems market, that's only going to help drive sales of applications for it."

"The excitement is back again. Things are starting to turn around," Burnham says. "My phone rings off the hook. Customers are telling us they want OS/2 applications and they want them in a big way."

Burnham's commitment to OS/2 development stems from the operating system's ability to multitask a variety of functions. OS/2, he says, can run several of the firm's applications at once. "But if I start a solver thread in Windows," he counters, "that's it. That's significant for our customer. OS/2 makes working a lot easier. It is the successor operating system to DOS."

Lotus sources are forecasting a dramatic increase in application sales based on the release of OS/2 2.0, another of the reasons for Lotus' bond to the system. Experienced OS/2 users assert IBM's rewrite is a vast improvement over version 1.3, and the newer ver-

VENDOR PROFILE

sion, once it truly catches on, is expected to elevate customer interest in useful applications. "Notes, for instance, has tremendous potential, although it's still about nine months away from its market potential," DePalma says.

It is also interesting to note that Lotus developers themselves enjoy working with OS/2. The operating system is employed by the company as a means for creating its various applications, including programs to be used on competing operating systems such as DOS and Windows. Bob Lee, manager of development at Lotus, points to several key features of the OS/2 development environment—ability to run compilers, recoverability and crash-safe testing of Windows applications—as critical for producing applications. In fact, one might say that the ease of application development will soon enable the company to expand its current quartet of applications into an entire symphony.

"OS/2 is an operating system that gives us the platform to develop sophisticated applications that we could not develop in Windows or DOS," Burnham says. "We needed a multitasking, multi-operative system."

With that as the case, Lotus apparently is now set to overcome past difficulties and become a driving agent within applications development for OS/2. Indeed, Lotus "may well revolutionize the way offices work," says Ed Lilly, a Lotus account development manager for IBM. "They are well-positioned today to be a leader throughout the '90s. Every application is going to be optimized for OS/2, taking advantage of the Workplace Shell, working together, which is OS/2's theme. It's the integration of the suite of products." ♦

Robert Long is assistant editor of OS/2 Professional.



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THE LAW

Legislation and Regulation for the Information Age

BY TIMOTHY J. BURGER

Remember Michelangelo? Not the one who painted the Sistine Chapel. We're talking about the computer virus whose bark was bigger than its bite on the great artist's birthday. Well, jokers like whoever proliferated Michelangelo earlier this year took a body blow in the form of passage of S. 3349, a measure felonizing "computer abuse." As defined, abuse includes the implantation of computer viruses with criminal intent. This passed the U.S. Senate on October 7, made it through the U.S. House of Representatives the next day, and is expected to be signed by President Bush.

"I think it'll help," said Tom Lemberg, vice president and general counsel for the Cambridge, Massachusetts, software firm, Lotus Development Corp. "It's very difficult to get law enforcement officials to pursue misdemeanors," he said, explaining the principal advantage which the industry sought and won in this bill.

• **Unauthorized access indictment.**

Just last month, a Maryland resident was indicted on charges that he accessed confidential computer databases through his courthouse investigator's job. The investigator was running a private business selling information about state residents. James T. Babbet, the 27-year-old son-in-law of the court clerk, was charged with unlawfully accessing public records and unauthorized access to a state computer system, both state misdemeanors.

The case is significant because it is the first ever reported in hi-tech Montgomery County, Maryland, a suburb of Washington, D.C. It may also be the first of its kind in the state of Maryland, State's Attorney Andrew L. Sonner said.

• **Export measure dies.** The Export Administration Act, H.R. 3489, had a fatal non-encounter on October 6, when

the House went out of session without passing it. The measure had included provisions relaxing security-based export restrictions for high-technology products, as one industry savant explained it. U.S. firms have been at a disadvantage in this area as a result of coordinated relaxation of such standards by 16 allied countries through a committee formed some 40 years ago.

• **Software copyrights protected.**

One area in which inaction was welcome for most in the industry concerns the World Intellectual Property Organization (WIPO), which had questioned the Berne Convention's classification of software as "literary works" for the purpose of copyright protection.

The question was formally raised in January and had been slated for consideration in a series of meetings, the latest of which was postponed indefinitely. Industry experts consider the indefinite postponement of a resolution of this matter as a good sign—and would love to see it dropped once and for all, reports one informed source.

• **Energy use restrictions.** A highlight for the Computer and Business Equipment Manufacturers Association (CBEMA) came this year when the Energy Bill, H.R. 776—which was before President Bush for an expected signature when *OS/2 Professional* went to press—specifically required the Secretary of Energy to consult with the association while working on reduction of the "energy consumption of office equipment."

• **Chinese understanding.** On the international scene, U.S. software exporters were gratified by China's January 16 signing of a "memorandum of understanding" in which the country proclaimed its intention to join the Berne Convention this fall. Together

with India and Thailand, according to CBEMA, China has been estimated to be responsible for some \$600 million in losses to U.S. copyright holders. (CBEMA estimates that more than half of these losses piled up in the software industry.) Under the current Berne Convention, China would join about 100 countries in holding that software is protected in the manner of literary works.

China's change of heart came after the country had been named a "priority" country under Special 301 authority granted to Carla Hills as the U.S. Trade Representative. The International Property Alliance, has recommended that the Philippines, Poland and Taiwan be added to the Special 301 list the next time it is updated, sometime before April 30, 1993.

• **"Fair use" legislation.** In Washington again, Congress signed off on H.R. 4412, known as "fair use" legislation. It was introduced to make unpublished historical documents available for public use—and possible publication. As originally conceived, the legislation, which passed the House some time ago and cleared the Senate on October 7, had some in the industry worried that it "would've made available [for publication] all kinds of things, including software documentation and" perhaps even software itself which had been developed but not published, said one source. "There was a compromise on fair use... which satisfied the software industry's desires," according to Lotus's Lemberg. ♦

.....
Tim Burger is a reporter for Roll Call, the twice-weekly "Newspaper of Capitol Hill."

Look for Tim Burger's "NAFTA Focus" in the January 1993 issue of *OS/2 Professional*.

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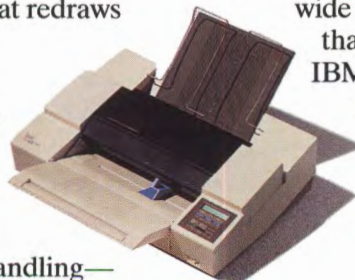


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HARD DRIVE

Adventures in gear for the OS/2 Professional

More Is Better—NEC 5FG

The NEC 5FG offers a crisp, bright display that is worth the price.

BY BRADLEY DYCK KIEWER

There are two parts to a computer that can make it a joy to use or a millstone around your neck: the keyboard and the monitor. Not surprisingly, these two peripherals can be a subject of debate within your corporation: is it worth the extra dollars to purchase a "better" product, whether as an add-on or in the form of a more expensive system? If you use your computer all day, your answer is probably "Yes." But, the accounting department may have a different perspective on the matter.

When it comes to shopping for a monitor, many people feel they can rely on more objective measurements such as dot pitch and bandwidth, rather than more subjective "feel" that can produce such heated debates about keyboards. Nevertheless, a little experience with different monitors may soon leave you wondering about those supposedly "objective" measurements.

As an example, consider the NEC MultiSync 5FG monitor. At the now commonplace resolution of 1024x768, it has an exceedingly crisp bright display. You can reduce your default OS/2 screen fonts to the VGA-standard size of 14x8 and (if you're not too far-sighted) still clearly distinguish the characters on the display. The specifications certainly seem to bear out the observation: a .28 mm dot pitch and a 135 MHz bandwidth. What you may discover, however, is that in comparing the MultiSync 5FG to other monitors with matching (or even better) specifications the 5FG comes out looking better. Why? Because there is a lot of room to "fudge" monitor specifications in the industry.

There is not room here to cover all of the details, but a few examples should give you a better feel for the problem. Most people look first to the dot pitch rating to get an idea of monitor quality—the smaller, the higher the resolution and hence the better. But, the dot pitch only determines a theoretical limit. If the monitor's elec-

tronic components cannot handle the high-frequency signals of a high-resolution display very well, a small dot pitch is wasted.

The situation is somewhat analogous to the problems in high-end stereo systems years ago. The bandwidth of a display is similar to the frequency response of an audio system. As the signal frequencies go higher, the quality of the components determines how well the system will respond. If you were shopping for a stereo component, you wouldn't look only at the frequency response—you'd check other factors such as distortion (of which there are many

types) and the "evenness" of the response. If there is too much distortion, the system won't sound right—you can lose clarity or hear over- or under-emphasized ranges.

Likewise, on a monitor, you can see the effects when the electronics are pushed too hard. Edges (especially vertical lines and characters) become fuzzy. You may see ghosted images. Or, the display may jitter and swim. Such features often appear when a monitor is at its highest resolution. Other factors not related to the electronics (e.g., alignment of the electron beams which form the image) can have a visible effect, too.

The MultiSync 5FG exhibited no visible side effects at 1024x768 interlaced (XGA) resolution. Also crisp was 1024x768 non-interlaced (Super VGA), although a closer look revealed some very slight fuzziness. Keep in mind that the video adapter electronics must also generate a clean signal at high resolutions and even that slight fuzziness *might* have been caused by the interaction between the adapter, the monitor and the cable, rather than resting



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HARD DRIVE

solely with the display. NEC rates the monitor as capable of 1280x1024 and provides both a VGA-style cable and BNC connectors. BNC connectors are more common on high-end video coprocessor systems—the connectors (and the attached cable) help prevent signal degradation at higher resolutions.

Of course, as resolution increases on a given display, the smaller the details become. Even at 1024x768, a slightly larger display would be helpful. If you are planning to use 1280x1024 or higher resolutions, you should consider moving up to a larger model such as the MultiSync 6FG. Such a combination is better suited to desktop publishing and CAD applications than general business functions—especially since the relatively small increase in resolution comes at a rather high price. But, if your job requires every last bit of detail you want as large a screen as possible.

Display sizes themselves are subject to a fudge factor. Although the MultiSync 5FG is called a 17-inch monitor, the diagonal measurement is only 15 inches. The industry as a whole measures with smaller rulers than you and I, but NEC seems to use an unusually small ruler even for the industry. To their credit, however, the usable display area on the MultiSync 5FG is comparable to other 17-inch monitors. Indeed, one aspect that gives this monitor a better “feel” is its ability to use an extremely small black border. Your

attention can focus entirely on the display. This is further enhanced by the clean, minimal look of the display itself: except for power, the buttons and dials are hidden from view.

NEC has oft been criticized for the reflective qualities of the FG monitors. They did not include an anti-glare coating on the display. Rather, a monitor “lens” is an optional device you may purchase to reduce the glare. While most users seem to think this lens is a necessity, I find that in a graphical environment (where the background is usually white or very light colored) the reflections are not as noticeable. The lighting arrangement in my office also minimizes glare. Thus, I am quite comfortable working without the lens, but your software and office layout could make the lens a necessity.

When it comes to monitors and display adapters, I have always urged clients and friends to “try before you buy.” The specifications listed with the equipment and promotional brochures simply do not contain enough information to help you make a choice without using the products or getting recommendations. The NEC MultiSync 5FG is priced toward the upper end of the 17-inch monitor market—especially if you include the cost of the monitor lens. But, in my opinion, the NEC MultiSync 5FG is worth every penny.

SNEAK PEEKS

A Colorful New Lexmark: the IBM Color Jetprinter PS 4079

Lexmark's newest printer is OS/2 ready and market-wise.

BY BRADLEY DYCK KIEWER

If Lexmark is an indicator of the kind of innovation we can expect from an IBM spin-off corporation, OS/2 users have much to look forward to in the PC arena as well. IBM made its reputation as a conservative, but reliable, producer of business equipment. But, many people feel that the bureaucracy of its large corporate structure kept IBM from responding quickly to the rapid technological advances prevalent within the PC industry. In March 1991, IBM sold its printer division, keeping only a 10 percent interest in the new corporation called Lexmark.

Lexmark's newest printer, the IBM Color Jetprinter, has a base resolution of 360 dots per inch (dpi), slightly better than the 300 dpi base resolution of most laser printers. But printer technology has not stood still. Many newer laser printer models have imple-

mented methods that enhance resolution. There are two basic techniques—edge enhancement and halftone enhancement. The former produces smoother curves and lines while the latter increases the number of gray shades available. If you are interested in the details (as they apply to laser printing) you can refer to this author's “Under the Hood” column in the March 1992 issue of *BYTE*.

A printer may support one enhancement technique without the other—the Jetprinter supports both. Black and white laser printing is often used for desktop publishing. In publishing, the printed page becomes the master for reproduction on a press. Here, you want smooth edges that make the type stand out. And while you want great halftones, the laser printer halftone enhancement methods are sometimes unsuitable for accurate reproduction.

HARD DRIVE

Color printing, on the other hand, is often limited to a few copies produced directly on the printer (due to the costs associated with color reproduction). Color transparencies for a presentation would be a typical application. Here, the broader color palette available through halftone enhancement can be a valuable asset.

Resolution enhancement (which Lexmark calls Colorgrade on the Jetprinter) is computationally intensive. The Jetprinter uses a 32-bit, 16 MHz RISC processor to convert color Postscript commands into the pixels which form lines, text and halftone patterns (a process called *rasterization*). In addition to Postscript, the Jetprinter can rasterize HPGL. The HPGL support, along with the built-in paper tray, which handles pages up to 11x17 inches, makes the Jetprinter suitable for CAD (Computer Aided Drafting). You need not select one mode or the other, the Jetprinter will watch the incoming data and automatically switch between Postscript and HPGL interpretation as needed.

The Jetprinter ships with 4 Mb of RAM. A standard bitmap representation of a four-color, 8.5x11 inch page would normally require about 6 Mb of RAM—and that would support only 16 colors. To resolve this problem, Lexmark puts the RISC processor to work compressing the rasterized image (much as archiving and disk compression utilities reduce file sizes). Lexmark claims a 3-to-1 compression ratio for the Jetprinter. That leaves room for improvement when you consider the memory requirements for a full 11x17-inch page at 144 color levels (per cartridge) and 360 dpi resolution. The on-board memory can be expanded to 16 Mb if the base memory configuration is not sufficient.

The Jetprinter comes with printer drivers for OS/2. It is compatible with the IBM 4033 LAN Connection device if you prefer OS/2 LAN support over the network itself, rather than through a server. The Jetprinter comes with parallel, serial and LocalTalk (used by Apple Macintosh) connectors. An optional Y-cable may be purchased that allows all three physical connections to be available at once.

Although the Jetprinter will handle plain-cut sheet paper, Lexmark recommends the use of coated paper for the best results. In our preliminary testing, we found that coated paper produced more vivid colors. But even the plain paper results were impressive. The Colorgrade halftoning algorithms can be adjusted to the paper

type: coated, plain or transparency. Lexmark paid attention to the details—when printing on plain paper, we did not notice a tremendous difference between the coated and plain settings, but the plain setting did produce slightly better colors. However, we saw excessive bleeding with heavily saturated overlapping colors on plain paper (you can use another setting to slow the print speed and reduce bleeding).

You can adjust a number of settings (or run print tests) through selections on an LCD menu. The list of options is quite extensive, so working through the menu can be a bit daunting at first. If you like adjusting your printer for the best possible results, you will

probably need to keep the manual with the menu diagrams close to the printer. On the other hand, you can probably find a setting that works fine for most of your work, sit back and let the Jetprinter work its magic.

Lexmark rates the print speed at 0.7 pages per minute. Of course, this is a best-case scenario in draft mode. As anyone who has worked with Postscript is aware, the processing time to rasterize (or transfer) a com-

plex image can be substantial. A couple of sample pages printed from CorelDRAW 2.5 for OS/2 2.0 covered a range of about 3 to 10 minutes per page. CorelDRAW and the print spooler added very little overhead—most of that time was spent rasterizing and printing the pages.

What is perhaps most impressive about the Jetprinter is the price/feature ratio. At a suggested retail price of \$3,495 for color Postscript, it is almost competitively priced with black and white laser printers. Of course, the Jetprinter is too slow and expensive to replace a laser printer—but for offices that need an adjunct color printer it looks like a promising choice. We look forward to putting the Jetprinter through its paces and reporting more complete test results and impressions. A more complete review will follow in an upcoming issue of *OS/2 Professional*. ♦

Bradley Klierer is the Editor of OS/2 Professional.



IBM Color Jetprinter

Lexmark International, Inc.
740 New Circle Road NW
Lexington, KY 40511
(606) 232-2000

LIST PRICE:

\$3,495

Ink Cartridges:

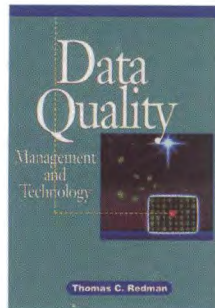
\$24.75 (black)

\$34.75 (cyan, magenta
and yellow)

Authoritative Information, Essential Resources

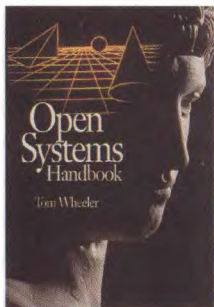
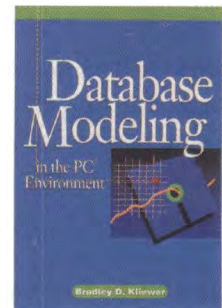
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0-553-09149-2 ▾ 320 pages ▾ \$49.95



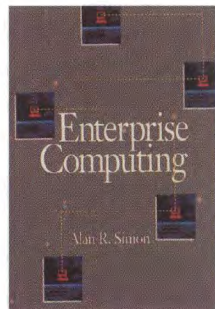
Database Modeling in the PC Environment is an introduction to designing relational databases for optimal performance. It shows how to group and organize data more efficiently, shorten development time, reduce storage, and optimize data retrieval. An excellent primer for those who need to understand databases in order to communicate their requirements to a programmer.

0-533-08952-8 ▾ 320 pages ▾ \$44.95



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BOOKSTAX

OS/2 Presentation Manager Programming for COBOL Programmers

by Robert B. Chapman • QED Publishing, \$39.95

REVIEWED BY CHRISTOPHER FIERROS

Without a doubt OS/2 is quickly becoming the target platform of choice for both downsizing of host applications and developing mission critical business applications. However, the OS/2 Presentation Manager is one of the most powerful and complex graphical user interface environments existing on the personal computer today. The most difficult aspect of developing applications with the OS/2 Presentation Manager (PM) is just getting started.

In the world of personal computing there is no single resource that affects the performance of an operating system as memory. Likewise, in the world of application development there is no substitute for sample code. *The OS/2 Presentation Manager Programming for COBOL Programmers* by Robert B. Chapman provides COBOL programmers, embarking on OS/2 Presentation Manager application development, with this essential sample code.

The programming guide is based on a training course also written by Chapman and the approach used throughout this guide is one of code-by-example. The guide comes complete with over five megabytes of sample code (including source, object and executable) compressed onto a single 3.5 floppy diskette.

The programming guide contains 13 chapters. The first two chapters introduce the COBOL programmer to the OS/2 Presentation Manager development environment, while the remaining 11 chapters are dedicated specifically to code-by-example development of a sample business application.

OS/2 Presentation Manager Programming for COBOL Programmers begins by providing insight into application development with OS/2's graphical user interface, PM. A brief discussion of other languages, such as C, is presented. However, this discussion is limited to a programmer's view and, unfortunately, was not expanded to include a business-oriented perspective. This chap-

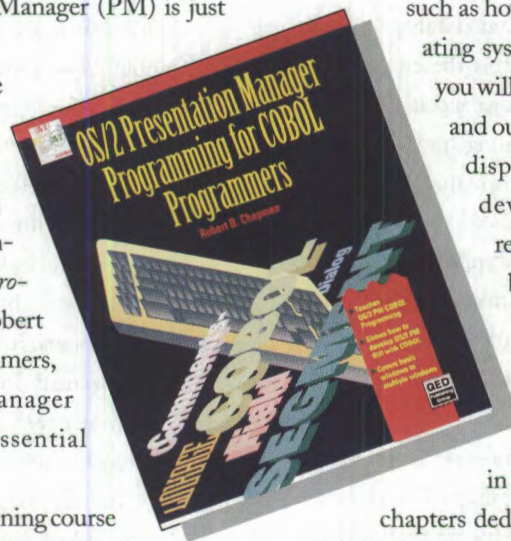
ter lacks a more thorough discussion on how, when and why to choose a programming language such as COBOL to develop OS/2 PM applications from both a development effort and a business perspective.

As Chapman introduces the OS/2 Presentation Manager in the second chapter, he covers the fundamental OS/2 topics such as how OS/2 applications interact with the operating system and process events or messages. Here, you will find details on user interaction such as input and output from OS/2 applications in terms of the display screen, keyboard, mouse and other devices. Other important user interface resources or "objects" such as windows, push buttons, data entry fields and radio buttons are covered as well.

As mentioned earlier, Chapman is conscious of the importance of coding examples—these begin to appear early in the book. Chapter Three is the first of 11 chapters dedicated to code-by-example development of an OS/2 PM business application. The first sample program introduces only the essential PM Application Programming Interface (API) calls to create a standard GUI window. Chapman discusses the example code in detail, and lays the foundation for the chapters to follow. This simple program evolves into a fully functional business application with each chapter that follows.

As the evolution continues, minor changes demonstrate techniques for displaying static text in the window client area. And, he introduces an input/output (I/O) module which reads data from a sequential file. The data is displayed in the window client area.

Chapman then progresses to the use of PM resource files. He modifies the sample program to include an action bar with an accelerator table and an icon. You will also find coding examples of message boxes and dialog boxes, including examples of dialog controls such as the push button, entry field, list box, radio button, check box, multiline entry field (MLE) and combo box. Of course, any



BOOKSTAX

slick PM program will make use of multiple window processing, and Chapman covers this topic as well.

The final chapters in Chapman's guide provide the COBOL application developer with everything else that is needed to round out the corners of their application. The Information Processing Facility (IPF), OS/2's help facility, is probably the most under-utilized resource available to OS/2 application developers. This facility can be used to bring information and context-sensitive application help to users. Chapman has dedicated an entire chapter to coding the OS/2 IPF.

Of course, any COBOL programmer realizes the importance of standard reports and database operations. Chapman integrates these topics with the unique capabilities available to PM programmers by formatting standard COBOL reports to PM-independent printer devices as well as the standard printer ports. Chapman also makes use of the OS/2 relational database engine, Database Manager (DBM). He demonstrates the creation of a database and modifies the sample program to access this DBM database. The DBM Application Programming Interfaces (API) necessary to connect to and disconnect from the database are coded, as well as the API to re-start a database.

Chapman wraps up the book with a sample application that uses one of OS/2's key features, the Dynamic Link Library or DLL. Finally, in the Appendix, he provides a list of the most common Presentation Manager Application Programming Interface calls in COBOL format.

Chapman's programming guide, for the most part, is complete as a Presentation Manager programming guide. The code-by-example format allows both the novice and experienced COBOL programmer to quickly develop a sample PM application. But, there are some features of OS/2 which are not included in this guide. These features such as Dynamic Data Exchange (DDE), cut and paste, multiprocessing and multithreading do not fall into the Presentation Manager API category. However, they are most commonly used with PM applications. Understandably so, inclusion of all the features provided by OS/2 would triple the content provided in this programming guide. Overall, Chapman's programming guide is an essential tool for any COBOL programmer embarking on OS/2 PM application development. ♦

Christopher Fierros is an OS/2 application specialist at the IBM OS/2 Application Assistance Center in Dallas, Texas. His primary focus is to provide expertise to IBM customers who are developing OS/2 applications using Micro Focus COBOL, the OS/2 Presentation Manager graphical user interface and the OS/2 Database Manager relational database engine.

WARGAMES

continued from page 23

necessarily classified) increasingly resides on and is shared between automated information systems without requisite security considerations ... Responsibility dictates that we must carefully define what must be protected and concentrate our finite resources upon safeguarding our most important assets and information. This requires a fundamentally new way of thinking about the 'security envelope' to be applied to our information and information systems in the post-Cold War period," the document reads.

With this 'security envelope' in mind, the Pentagon has turned to a number of private companies and consultants that specialize in viral and computer warfare. During the next five years, the Pentagon plans to spend hundreds of millions of dollars to safeguard U.S. systems while honing its own offensive informational warfare capabilities. Indeed, investment in viruses and antiviruses as well as countermeasures against malicious software is expected to consume about 25 percent of the Pentagon's total informational warfare budget, officials in Washington say.

"We have to view the virus in the computer age as a national threat that could return us to the days of pencil and paper," Dr. David Stang, executive director of NCSA told a recent gathering of government and industry professionals in Crystal City, Virginia.

Scott Charney, chief of the Justice Department's computer crime unit, concurs. In a report written for the San Francisco-based Computer Security Institute, Charney estimated that earlier this year there were nearly 1,000 known virus strains infecting personal computers in the private and government sector. By the end of the year, Charney says, the government expects to see an additional 600 viruses and mutant strains.

Referring to the larger threat—and potential—of nonlethal and informational warfare, Monro says the next war will almost certainly rely more on nondestructive, militarily effective means. "The Persian Gulf War represented a quantum leap in precision operations and high-technology ... The next time around, informational warfare may prove decisive. As the world becomes increasingly computer-dependent, whoever is best equipped to defend his own network while debilitating the command, control, communications and intelligence capabilities of the enemy will ultimately prevail." ♦

Barbara K. Bezek is a defense and intelligence writer based in Washington, D.C.

MARKETLINE

Product News for the OS/2 User

SCOOPS

RAID 7 debuts

Storage Computer Corporation (StorComp) has announced a new disk subsystem based on RAID technology. RAID (Redundant Array of Independent Drives) was designed to provide continuous disk access without data loss in the event of a drive failure. It is typically characterized by five levels originally outlined in a 1987 paper from the University of California, Berkeley.

The RAID level is not an indicator of quality or speed—it simply indicates a feature set. Indeed, some RAID levels have little practical application in most computing environments. Heretofore, most attention (and debate) has been focused on two levels: RAID 3 and RAID 5.

But StorComp has developed a system called the RAID 7 Storage Computer (a previous StorComp system wore the RAID 6 moniker). According to StorComp, the techniques employed in this method overcome the limitations of RAID 3 and RAID 5. The Storage Computer uses its own imbedded operating system called SOS. At a physical level, the disk striping follows RAID 4 conventions.

RAID 4 has largely been ignored because of Input/Output bottlenecks on the parity drive (used for error checking and recovery). Rather than solve RAID 4 bottleneck problems through a physical restructuring of the storage patterns (the approach used by RAID 5), SOS integrates several different caching techniques, data prefetching and seek-optimization methods to break the bottleneck.

By designing an operating system specifically for disk management, the Storage Computer attains data throughput rates that exceed traditional RAID systems and approach that of solid-state devices. Of course, throughput will be further limited by the data rate of the disk controller.

The Storage Computer uses a SCSI 2 interface and is designed to appear as a standard SCSI drive to the host computer. Thus, any OS/2-based server with a SCSI 2 controller should be ready to use the Storage Computer. The Storage Computer also supports other platforms such as AS/400, DEC VAX and most popular UNIX workstations.

StorComp, 11 Riverside St., Nashua, NH 03062, (603) 880-3005.



DCF/2, Proportional Software's Disk Compression Facility for OS/2, now in release V1.1, is the first disk compression utility available to OS/2 users. Its fast, reliable compression techniques give the user increased storage on existing disks supporting both HPFS and FAT partitions. By utilizing OS/2's multithreading capabilities, DCF/2 can compress files without heavy operating penalties.

DCF/2 ships

DCF/2 allows the user to choose levels of compression utilizing external Compression/Decompression Engines (CDEs) so the user can make a choice between compression and performance when there is a trade-off. It will also allow the future implementation of other features such as on-the-fly encryption and virus checking capabilities. Compressed storage is available to programs running under DOS or Windows within the OS/2 environment.

DCF/2 lists for \$129.95 and there is a special introductory offer at \$99.95 during COMDEX and until December 31, 1992.

Proportional Software, 1717 Linden Lake Rd., Ft. Collins, CO (800) 666-4672.

Design Management and Reusable Objects for Gpf 2.0

Gpf Systems has just released GpfTools, a design management tool complementing its OS/2 2.0 GUI designer, Gpf 2.0 (GUI Programming Facility). Gpf is an interactive, point-and-click development tool that speeds the design of OS/2 Graphical User Interfaces for the Presentation Manager Workplace Shell.

The new Tools package

provides for graphical or texture design browsing, thus allowing management and documentation. This greatly changes Gpf's utility in large projects and team development efforts by permitting designs to be merged and Gpf object dictionaries to be created.

GpfTools also allows Gpf design objects to be started

and reused between designs and designers. Generated C source code can be used to design a complete user interface that can be designed, tested and implemented in a few hours. Designers should find dramatically increased productivity because Tools

will allow interface, design, testing and code generation from an integrated work environment.

Gpf 2.0 was the first 32-bit GUI development tool released for OS/2 2.0. It offers full support of the enhanced CUA 91 control

set. The generated 32-bit code targets the IBM C Set/2 compiler and Watcom C 9.0 with other compiler support promised. The single-copy price of GpfTools is \$199.

Gpf Systems, Inc., 30 Falls Rd., Moodus, CT 06469-0414, (800) 831-0017.

PRODUCTS

Corel supports Kodak Photo CD

Corel has integrated both CorelSCSI and CorelDRAW into Kodak Photo CD technology, promising exciting opportunities for image editing and desktop publishing.

Kodak's Photo CD system allows the user to combine the quality of film with the flexibility of a digital format. This provides desktop users with a low-cost, easy-to-use solution for working with photographic quality images.

CorelSCSI device drivers are now able to read Photo CDs from any XA compatible CD-ROM drive including models from NEC, Sony and Toshiba.

Corel has also integrated the format into Mosaic, CorelDRAW's visual file manager. Mosaic allows the user to view images stored on the CD in both thumbnail and enlarged sizes. The user can then convert the Photo CD files into BMP, EPS and TIFF format for editing in CorelPHOTO-PAINT and CorelDRAW.

CorelDRAW 32-bit version for OS/2 will include

CorelDRAW 2.01, CorelTRACE, 2.01 and WFN-Boss running under Mirrors, as well as Mosaic, CorelCHART and CorelPHOTO-PAINT running under seamless Windows. This version will also include a CD-ROM disk with all the clipart from the 2.01 version.

Corel Corporation, 1600 Carling Ave., Ottawa, Ontario K1Z 8R7, (613) 728-8200.

New security software

Pyramid Developmental Corporation has introduced PC/DACS, a data access control system for personal computers.

The security software package allows users to protect workstations from accidental or malicious loss of data or programs.

Pyramid claims full compatibility with IBM's 32-bit OS/2 operating system. It provides security that includes user identification and authentication, session time out, encryption and boot protection.

Large organizations cus-

tomize PC/DACS to meet security requirements across thousands of PCs.

Pyramid Development Corp., 70 Inwood Rd., Rocky Hill, CT 06067, (203) 257-4223.

OS/2 performance and analysis tools

A collection of powerful OS/2 performance and analysis tools, packaged as CPU Monitor, is now available from BonAmi. CPU Monitor analyzes a system and determines which programs are utilizing the majority of the CPU's capacity and which programs need more attention. The software graphically displays statistical data for all processes and threads running on OS/2 systems. Features permit the user to stop unwanted, run-away or hidden programs, change thread priorities, suspend and resume individual threads on demand—even be done in real-time, asserts BonAmi.

BonAmi Software Corporation, 60 Thoreau St., Suite 219, Concord, MA 01742, (508) 371-1997.

NEWS

Spinnaker delays shipment

Spinnaker Software is delaying shipment on its PFS:Works for OS/2 2.0. Last August, Spinnaker announced it was shipping its 32-bit feature-packed word processor. The package was to include page layout, spreadsheet, chart editing, database, label making, address book and communications. But two months later, company sources confirm the product is "on hold awaiting code." Company sources declined to predict when the product would ship or if it could ship.

Expert Advisor commences beta

Software Artistry expects to begin beta testing Expert Advisor 1.0 for OS/2 in December. Expert Advisor is a help desk product that integrates voice, image and full-motion video to log calls and track problems. The current DOS version is popular with large corporate customers such as Domino's, Marriott, US West and Color Tile.

Applications range from hardware and software troubleshooting to inquiries about regulations and procedures. The OS/2 version will be a 32-bit multithreaded Presentation Manager implementation. Database management is handled by a client-server SQL link to one of three platforms: IBM's OS/2 Database Server, AS/400 Remote SQL or Novell's Netware SQL. ♦

DATA DATES

Seminars, Conventions, Expositions and Conferences for the OS/2 Professional

JANUARY 10-15

KOVSKY'S COMPUTER SOFTWARE

Colorado Springs, CO
Kovsky's Computer Software, headed by former Prime developer Wayne Kovsky, is hosting a week-long conference January 10-15 in Colorado Springs, Colorado. The seminar will feature a fascinating collection of OS/2 experts, including many who designed or implemented key features for the operating system. John Soyering, the event's keynote speaker, heads a faculty that includes: Rick Fishman, Peter Hagggar, David Moskowitz, Michael Perks and Bill Snow.

The seminar is timed perfectly to give attendees a wealth of winter recreation options. Colorado, known world-wide as a skier's paradise, should be buried under several inches—or possibly feet—of snow by the time the conference commences.

Contact: Amy Seymour, Colorado-OS/2, Cheyenne Mountain Conference Resort, 3225 Broadmoor Valley Rd., Colorado Springs, CO 80906, (719) 576-4600, (800) 648-5717.

JANUARY 12-14

NETWORLD '93 Boston, MA

The well-known international trade show reconvenes

in Boston in January. More than 365 exhibitors, including all major networking vendors, will showcase their products. More than 80 seminar sessions, as well as all-day immersion tutorials, will be available for those seeking answers on connectivity and interoperability.

Contact: Bruno Blenheim, Inc., Annie Z. Scully, (800) 829-3976.

JANUARY 18-22

WINDOWS & OS/2 CONFERENCE

San Jose, CA

A wide-ranging discussion on the features and uses of both Windows and OS/2 will be held January 18-22 in San Jose, California, at the San Jose Convention Center. Registrants considering options between the two platforms should expect major briefings from IBM and Microsoft.

There will be some 65 sessions in all. Both operating systems will be compared on a number of levels to determine their effectiveness in a variety of corporate environments. Topics will include: the cost benefits of an automated LAN management approach; use of multimedia for cost-effective employee training; CD-ROM and its storage capabilities and production technologies; and development of Windows and OS/2 applications. Michael Schrage will be the keynote speaker.

Registration fees range from \$295 for a single day to \$890 for the full week, including preliminary sessions and all tutorials. Six participating hotels are offering room rates from \$90 to \$145 through the San Jose Housing Bureau, fax, (408) 293-3705.

Contact: AcuReg for registrations, (214) 245-6358. For exhibition, contact, Marianne Fraticelli, Miller Freeman, Windows and OS/2 Conference, 600 Harrison St., San Francisco, CA 94107, (415) 905-2479.

FEBRUARY 22-26

SOFTWARE DEVELOPMENT SPRING '93

Santa Clara, CA

An OS/2 developer's conference will be held at the Santa Clara Convention Center in Santa Clara, California, February 22-26. Although specifics of the seminar have yet to be finalized, meeting coordinators are planning on more than 200 sessions from experienced software developers. Attendees will have the option of registering for Management or Development tracks, or from one- or two-day tutorials. Special lodging and airfare rates are available.

Contact: Marianne Fraticelli, Santa Clara Developers Conference, Miller Freeman, 600 Harrison St., San Francisco, CA 94107, (415) 905-2479.

JANUARY, FEBRUARY, MARCH '93

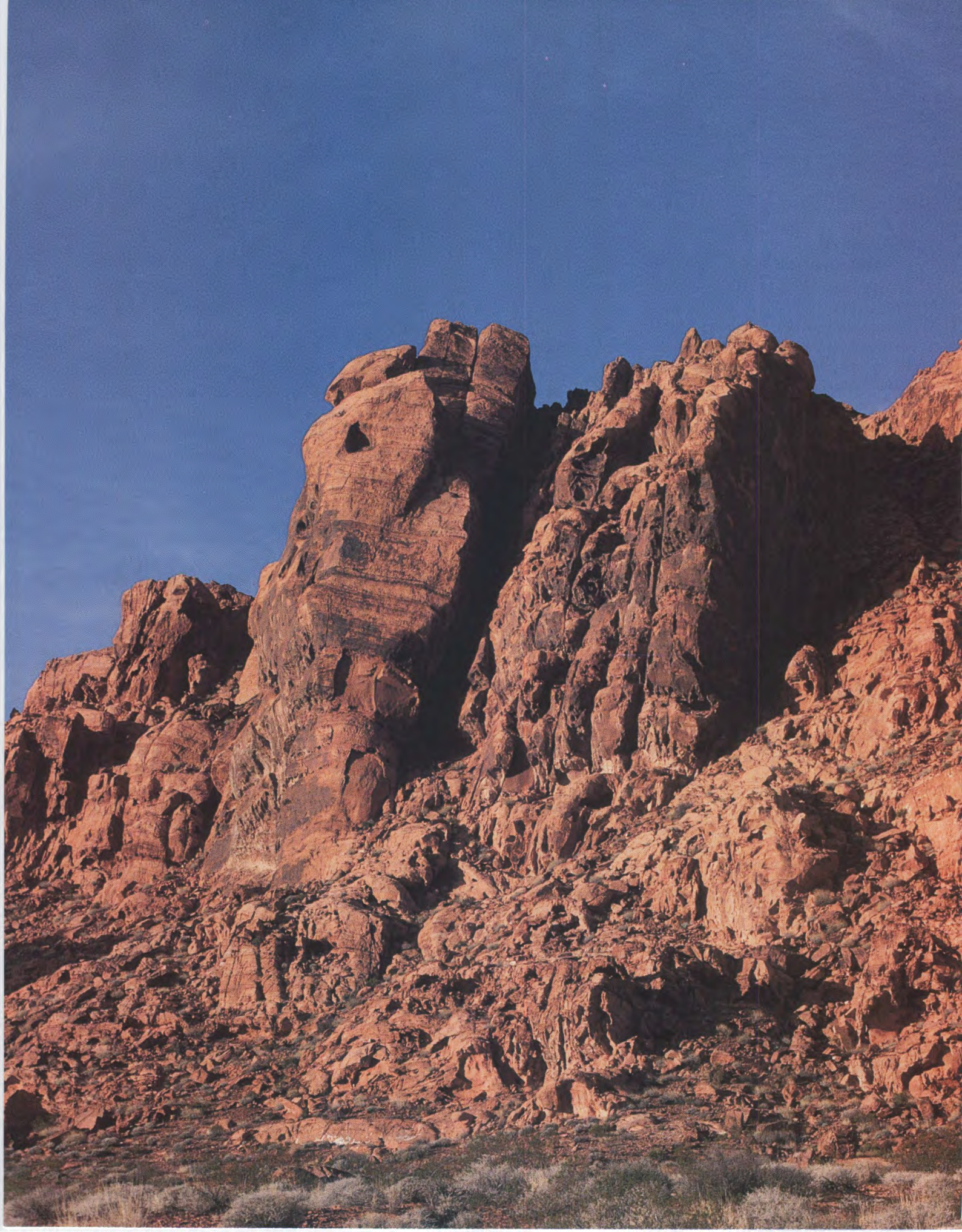
OS/2 HITS THE ROAD

IBM's OS/2 Tour '93 has announced a series of half-day seminars for the first quarter of 1993. Program coordinators say the conferences are designed to enhance the visibility of OS/2 by promoting it to small business interests. Seminars are preliminarily scheduled for: Charlotte, Atlanta, Los Angeles, Dallas, Portland and Chicago. The seminars will highlight the benefits of the operating system, its applications and the support and various services available.

For registration information, call the OS/2 Seminar Registration, (800) 424-4344.


Contact: Jeff Hoffman, Right Source, 142 Old Ridgefield Rd., Suite 201, Wilton, CT 06897, (203) 761-0718. ♦

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Send meeting & conference notices to Data Dates, OS/2 Professional, c/o International Features, 6129 Executive Blvd., Rockville MD 20852. Diskette files accepted in unformatted ASCII or Microsoft Word for DOS. Diskettes will not be returned. Email: via MCI Mail to os2pro or via Internet to os2pro@mcimail.com.



VEGAS

Beyond the Slots



If business or conventions take you to Las Vegas, and the clatter and roar of the Vegas strip is not your thing, save your quarters and rent a car. There's a whole world of natural splendor just a short drive from the glitz and glitter of Las Vegas.

Rather than the whirl of slot machines, sounds in the Nevada wilderness are limited to the cries of birds. The scene is lighted not by a montage of neon signs, but by the golden glow of sunrise and the nighttime glitter of countless stars.

SPRING MOUNTAIN RANGE

For example, Charleston Peak, at 11,918 feet tall, the highest point in the Spring Mountain Range, is only about 50 miles from downtown Vegas. Hikers of all skill levels will find great reward throughout the Charleston Peak area. Several two-mile jaunts are ideal for casual dayhikers. They lead to such colorfully named destinations as Cathedral Rock, Echo Cliff and Mary Jane Falls. The more challenging five-mile Bristlecone Pine trail provides close-up introductions to the venerable trees for which it is named. Only experienced serious hikers should attempt the North or South Loop trails to Charleston Peak, a nine-mile, round-trip climb that can require more than a day.

Within an hour's drive of the neon-buzzing Las Vegas strip, visitors can find the solace and majesty of some of America's most satisfying wilderness areas.

Whether driving or hiking through the Spring Mountain Range in southern Nevada, the change of scenery is dramatic, almost mind-boggling. At 5,000 feet, the landscape is blanketed by pine trees, low-lying sagebrush and beautiful scarlet trumpeter. Slightly higher, this growth gives way to mountain mahogany and oak brush. The Aspen fir zone begins at 8,000 feet, where four-

foot-thick trees are not uncommon. Bristlecone pine grows at this elevation as well. Their twisted trunks and gnarled limbs often appear dead, but they have tenaciously clung to life for the past 4,000 years, making them the oldest variety of trees in the world.

RED ROCK CANYON

Even closer to downtown Las Vegas is Red Rock Canyon, high points of which offer a scenic overlook of the city. One can only marvel at this landscape of wind-sculpted sandstone outcroppings, rock chimneys and rugged bluffs. Most striking is the Red Rock Escarpment, a 3,000-foot mass of rainbow-colored pinnacles and huge boulders jutting up from the valley floor.

Red Rock Canyon was once home to tribes of Native Indians such as the Paiute, who roamed the region 900 years ago. They drank from springs that

WANDERLUST

still bubble up from the rocks, and their petroglyphic scratches provide rock-solid reminders of their presence. Visit just after a rainfall and you'll probably glimpse packs of bighorn sheep and wild burros at water-filled sandstone potholes and standing pools.

VALLEY OF FIRE

Perhaps one of the most dramatic views is the fanciful rock formations of the Valley of Fire. Shaped and sculpted by the action of wind and water over millions of years, the distinctively colored sandstone leeches so much iron content that the rock literally rusts over time. The eerie atmosphere of the valley constantly shifts your senses from lavender to tangerine to bright red. When the sun hits directly, it all appears to have caught on fire.

Many of the stone formations possess monikers for the familiar objects they resemble. Visitors have little trouble spotting Elephant Rock, Poodle Rock and a group of sandstone shapes aptly named the Beehives. Like other seemingly lifeless desert settings, the valley also serves as home to a variety of active animal life, including coyote, fox, antelope and desert tortoise. Raven, finch and road runners are among the birds that flit among the stones and outcroppings. After a cloudburst, desert wildflowers explode along the valley floor in multi-colored blankets that once visually savored will not be forgotten.

Here, too, the keen-eyed visitor is likely to spot petroglyphs and pictographs left by indigenous Americans, including the Basket-maker and Anasazi Pueblo who lived in the area between 300 B.C. and 1150 A.D.

Like much of the natural beauty that surrounds Las Vegas, the Valley of Fire is best seen and enjoyed by stopping the car, wandering off the road and then immersing oneself in the awesome beauty. Sit quietly on a rock. Listen and look for animals and birds. Imagine the world at a time when humans lived obediently close to nature's laws.

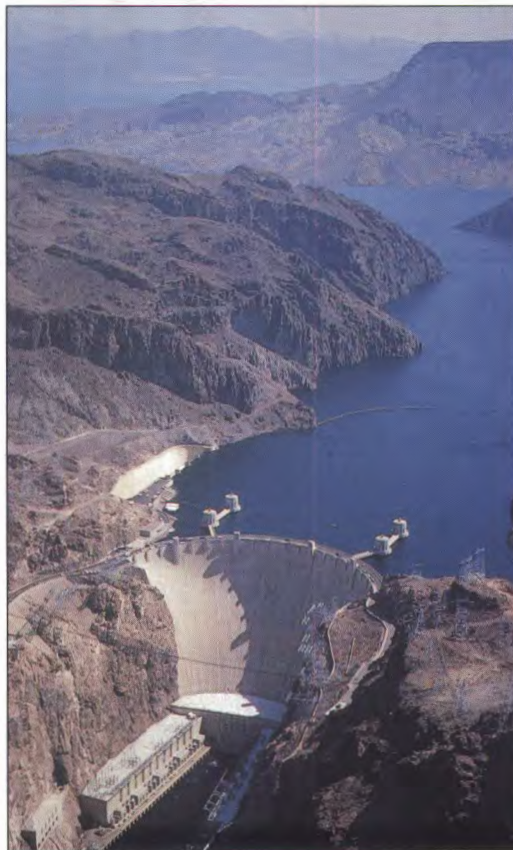
HOOVER DAM AND LAKE MEAD

Nature does not have the monopoly on spectacular settings. Some

structures purely manmade will leave you breathless. About 30 miles east of Las Vegas are Hoover Dam and the dam-created Lake Mead. Even visitors not usually enamored with industrial sightseeing find themselves awed by the highest concrete dam and largest man-made lake in the Western Hemisphere.

Every statistic about Hoover Dam is impressive. Its construction between 1928 and 1936 required excavation of nine million tons of rock. It contains 1,000 miles of piping and as much structural steel as the Empire State Building. The dam rises 726 feet to plug Black Canyon and control the 1,400-mile-long Colorado River. Before its construction, the river alternated between rampaging spring flows that flooded farmlands and, during dry times, a meager trickle that was inadequate to sustain crops and livestock.

At its farthest reach upriver from Hoover Dam, Lake Mead is 115 miles long. It has a maximum depth of 589 feet and is rimmed by 550 miles of shoreline, much of it sandy beach. The 229-square-mile lake is a mecca for camping and water sports, including boating, water skiing and fishing. With no closed season for angling, fishermen fill their stringers year round with striped and large-mouth bass, trout, crappie and bluegill.



Hoover Dam and Lake Mead, Las Vegas News Bureau

THE GRAND CANYON

About 150 miles due east of Las Vegas, in north-central Arizona, the Colorado River cuts the 278-mile-long Grand Canyon into the high plateau floor. No one who hasn't seen the grandeur and beauty of this world-famous sight should be so close without taking advantage of its proximity. Layers of rock strata, laid down in technicolor variations over the past one and a half billion years, are magnificent when viewed from any vantage point.

Scenic roads and hiking trails lead to overlooks on the rim. With advance reservations, visitors may enjoy much closer looks during hikes or mule-back trips into the canyon, overnight camping excursions and guided floats down the Colorado River. Or sign up for one of the bus or air trips to the Grand Canyon that are offered by tour operators in Las Vegas.

WANDERLUST

NEVADA GHOST TOWNS

Another alternative to the gaming tables is to discover the history and lore of Nevada. Visit one or more of the ghost towns created after a mining craze swept through the West in the 1800s. Cities of thousands of inhabitants popped up almost overnight, as prospectors and miners rushed to the site of the latest gold or silver find. Prospectors were closely followed by men and women who were attracted by the scent of fast money. Tradesmen, saloon keepers and bordello operators stayed as long as the veins gave their metal. As soon as the ore played out, residents departed for the locale of the next big strike. Behind, they left a landscape scattered with the skeletons of abandoned towns that had only a past and virtually no future.

A number of these old mining communities are located within a 150-mile circle of Las Vegas. Some are quite deserted, having long ago been left to the ravages of time, weather and souvenir hunters. Others are inhabited by a few hardy souls who relish the quiet setting, pure air and relaxed life style.

Searchlight, about 55 miles south of Las Vegas, grew around a rich gold strike in 1879. By 1907, when Vegas was still a village of shanties and tents, Searchlight had more than 5,000 residents, 44 working mines, two newspapers and a dozen saloons. Visitors today may seek out a number of historic buildings, and see the remains of abandoned mine shafts that dot the surrounding hills.

Goodsprings, 30 miles southwest of Las Vegas, was founded in the 1860s but didn't flourish as a mining camp for silver and lead until 30 years later. Several homes, abandoned mines and mill foundations await visitors. The mining camp of Nelson, a 40-mile drive south of Las Vegas, produced more than \$10 million worth of bullion during its heyday. Several historic buildings have survived, as well as the remains of once-productive mines and mills.

The hotels and gaming tables of Las Vegas provide a first-class setting for both vacationers and those in town to attend a business meeting or convention. But if you love nature, discover Vegas beyond the slots. It's a sure thing you won't be disappointed. ♦

Contributing writer Victor Block is a former State Editor of Fodor's Travel Guides.

PROFESSIONAL VIEW

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while excluding those who did not. However, that still is not an adequate excuse for the lopsided coverage that OS/2 has received. It is the job of writers in the trade press and industry analysts to look behind the immediate appearance of things and to discern the reality behind them. The trade press ought to be more than simply a lagging indicator of industry trends.

At day's end, the harm caused by more than two years of biased coverage pro-Windows and anti-OS/2 is likely to have more serious consequences for the trade press than it will for OS/2. Fortunately for OS/2, the reality of a product's utility to users is, ultimately, more important than what the press and the pundits say about it.

While there is still plenty of room for improvement, coverage of OS/2 is improving. IBM is starting to do a better job getting its message across to the media and to analysts. OS/2's growing success, of course, helps too.

Before long, I think we'll see what amounts to a major bandwagon effect and a rush toward OS/2. Before long, even those who pronounced OS/2 "dead" a year ago will be scrambling to claim that they really knew all along that it would be a big success.

For the present, though, the negative slant against OS/2 in the press remains an important obstacle to broader acceptance. That is something that IBM ought to address directly, not only through more effective public relations efforts, but by carrying the message directly to senior management at user organizations as well.

IBM is now doing a very good job getting the OS/2 message out both to corporate and to independent software developers. What IBM needs to do now is an equally effective job to bring that message to executives outside the Information Systems area.

Perhaps it's time for IBM to revive its old practice of high-level seminars for senior corporate executives. That would make it much easier for IS professionals interested in putting OS/2 to work in their organizations to get the support they need. ♦

Contributing writer William F. Zachmann, formerly a columnist with PC Magazine, PC World, PC Week, Computer World, and Info World, is now the host of the Canopus Research Forum on Compuserve (GO cis:Canopus).

The Operating System Cycle

If you have paid attention to industry periodicals over the last several years, you have been told that there is an operating system war going on and only one OS will prevail. If you believe this, then I suggest you re-evaluate the situation. We live in an expanding heterogeneous computing world which shows little sign of leveling.

I often encounter planners who develop conservative "wait-and-see" attitudes since emerging technologies always seem to be just six months away.

I am here to warn you that conservatism in strategic planning can be dangerous and detrimental to your employment. I am constantly approached with requests for my opinion as to what I think about the current state of competing operating systems. Upon examination, it becomes clear to me that there exists a generic operating system cycle. Remove the particulars associated with individual operating systems, and each travels the same path. Understanding this cycle will help you deal with this changing technology.

In the beginning, when version 1.0 of an operating system is announced, there is a great deal of excitement. This is when details are the sketchiest and where it is actually easiest to assume the new operating system solves all of the problems of the world. At this point, delivery is so far out that planners have a naive tendency to place the operating system on their strategic direction list without evaluation.

Time goes by, the excitement starts to fade as details begin to leak out concerning how performance is below what was expected, or how certain features will not be in the initial release. Analysts begin to downgrade their high forecasts of market success, changing to more conservative numbers.

Much to the surprise of no one in the industry, the company slips schedules, and the dates move out. Eventually, alpha versions are sent out to the press and selected analysts. Reviews are somewhat mixed, mostly based on popular opinion, rather than on technical analysis. Shortly thereafter, a few key developers are allowed early access to a limited beta program. Thus, more information becomes publicly available based on their experiences.

Finally, with much hoopla and fanfare, a major beta developers' conference is held, like the Win32 Professional Developers Conference. Every developer available in the free world is wooed to the

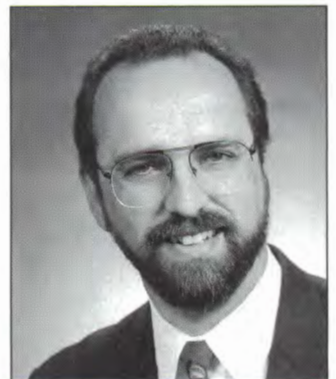
new operating system during this event. Of course, the application programming interfaces which were promised earlier are not quite available yet, so developers are directed towards a migration path, which will ensure a "painless" transition. As the beta version is periodically updated, incompatibilities are discovered between the programming interfaces and the previous beta version. This costs the developer precious development time in his effort to deliver a "finished" product to market.

Eventually the operating system becomes generally available, but unfortunately a large percentage of the applications which were being developed in the beta program are not "quite" ready yet. Press coverage focuses on how late the product is, what features are missing and incompatibilities with existing applications. This causes a slow acceptance rate, with companies waiting for the next release. Slowly, the product matures, and market growth occurs, often five to seven years after its initial introduction.

Those who have watched the industry, and can remember the details of the past decade, should agree at this point that DOS, Mac OS, NetWare, OS/2, UNIX and Windows for DOS are all in the maturing phase of this cycle.

I hope this explanation of the generic operating system cycle helps you realize that the world will be filled with many operating systems with each user buying his OS of choice—text mode vs. GUI, procedural vs. OOPs. Over time, old operating systems will change and new ones developed, but one constant will remain: the user's need to share data seamlessly with other disparate systems. Once users have experienced the benefits and productivity gains of cross-platform access, they will demand heterogeneous applications be developed and supported across all major operating systems. The important question to ask is not which OS will prevail, rather does the OS facilitate seamless exchange of data within our evolving heterogeneous environment. Remember, it's your decision! ♦

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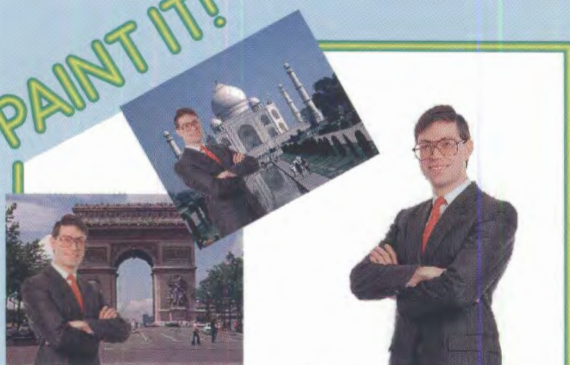
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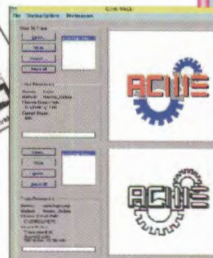
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